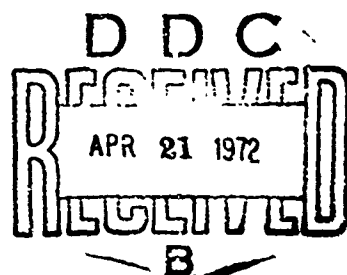


AD 740809



Methodology for an Economic Analysis To Improve Justification for Retention of Mobilization Production Capability

by Thomas F. Ferrara
Richard D. Goodfriend
Joel Morris



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1. ORIGINATING ACTIVITY (Corporate author) Research Analysis Corporation McLean, Virginia		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
		2b. GROUP	
3. REPORT TITLE Methodology for an Economic Analysis to Improve Justification for Retention of Mobilization Production Capability			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) September 1970-August 1971			
5. AUTHOR(S) (First name, middle initial, last name) Thomas P. Ferrara, Richard D. Goodfriend, Joel Morris			
6. REPORT DATE February 1972		7a. TOTAL NO. OF PAGES 129	7b. NO. OF REFS 15
8a. CONTRACT OR GRANT NO. DAH019-69-C-0017		8a. ORIGINATOR'S REPORT NUMBER(S) RAC-TP-443	
a. PROJECT NO. 011.204			
c.		8b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
d.			
10. DISTRIBUTION STATEMENT "Approved for public release; distribution unlimited."			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY US Army Materiel Command Directorate of Requirements and Procurement, Industrial Preparedness Division	
13. ABSTRACT The methodology described in this report provides the US Army Materiel Command with a detailed, two-phase procedure for performing a systematic analysis of all possible alternative ways of retaining a future production capability when a production line is about to be shut down. The method is designed to assist in the selection, on an economic basis, of an alternative that will permit the production line to be reactivated in the event of a future mobilization. The first phase consists of a preliminary evaluation to verify the need for retaining the line and to quickly screen alternatives, using a standardized sequential list of questions, to eliminate those that are infeasible. The second phase is the application of a formal economic analysis, primarily cost oriented, to the alternatives remaining after the initial screening. Complete documentation and instructions for use of the methodology by Army personnel are included in the report.			

DD FORM 1473
NOV 71

Security Classification

UNCLASSIFIED

Security Classification

REV WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Economic analysis						
Investment analysis						
Mobilization planning						
Industrial preparedness planning						
Layaway lines - costs						
Peacetime production capability						
Deactivation of production lines						
Costs of industrial preparedness						

Security Classification

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Research Analysis Corporation

McLean, Virginia 22101



Area Code 703
893-5900

FOREWORD

This study was performed by the Logistics Department of the Research Analysis Corporation to assist mobilization planners of the US Army Materiel Command in improving their methods for choosing among alternative means for retaining production capability for future use during national emergencies. The work was sponsored by the US Army Materiel Command, Directorate of Requirements and Procurement, Industrial Preparedness Division.

The methodology developed in this study provides the Army with a two-phase, economically based procedure for performing a systematic analysis of all possible retention alternatives that should be considered. The first phase consists of a preliminary evaluation to verify the need for retaining the line and to quickly screen alternatives. The second phase is the application of a formal economic analysis to the alternatives remaining after the initial screening. Complete documentation and instructions for use of the methodology by Army personnel are included in the report.

Lee S. Stoneback
Head, Logistics Department

ACKNOWLEDGMENTS

Appreciation is due members of the sponsoring Industrial Readiness Division, Office of the Director of Requirements and Procurement, HQ Army Materiel Command, (headed by COL Vincent J. Gorman, who was also the military Study Advisory Group Chairman) for their comments and assistance in coordinating visits with AMC subordinate commands. Thanks are also due members of various AMC organizations such as the Production Equipment Agency and US Army Weapons Command, Rock Island Illinois; US Army Munitions Command HQ, Dover, New Jersey, and US Army Ammunition Procurement and Supply Agency, Joliet, Illinois; Comptroller's Office and other offices in the AMC Requirements and Procurement Directorate for their comments and criticism.

Assistance was also gained from the Office of the Deputy Chief of Staff for Logistics, particularly LTC Ronald Snyder of the Industrial Facilities and Preparedness Branch, who provided much background information and insight into problem areas.

The authors also appreciate the assistance and guidance of the RAC Review Board: MG Selwyn D. Smith, Jr. (USA-Ret), Chairman; Mr. D. A. Downing; and Mr. W. C. Kilgore.

Thanks also to Mrs. Sharon Marmaduke for her editorial assistance and typing of the several draft documents.

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SUMMARY

PROBLEM

The basic problem addressed by this study is to provide mobilization production planners at Army Materiel Command levels with an improved method for analyzing and selecting, from among all possible alternatives for retaining production capability, the most desirable alternative for meeting mobilization production requirements when an operating production line that contains government-owned equipment is about to be shut down. The improved method must be based primarily upon the inclusion of economic factors and, because of the current restrictions on the defense budget, be formally recorded to act as a means of justification and documentation of the selection made for review by higher levels of authority. Additionally, due to the lack of continuous exposure of AMC personnel to deactivation and reactivation of facilities for mobilization purposes and because of the cyclical nature of this activity, the method developed should be as straightforward as possible and be well-documented in easy-to-follow steps to facilitate application.

FACTS

Mobilization production requirements in the past have been satisfied by some combination of reserve stockpiles of end items and by retention or "layaway" of government-owned production capability in one of three types of layaway packages. Other alternatives exist that may be less costly to the government but have not been given formal and proper consideration. Decisions for initiating layaway actions have been made without a thorough economic justification, and on a basis that did not provide documentation of the analysis sufficient to satisfy approval authorities of the soundness of the decision.

Current procedures for requesting authorization and funding approval for layaway packages have no provision for a formal economic comparison of all types of layaway and other possible alternatives for

retention of mobilization production capability, although they do include an estimate of the extent and some costs of the chosen type of layaway. Procedures for making an economic analysis for proposed investments do exist at all military levels, and somewhat different methods are widely used in industry. However, existing regulations pertaining to layaway requests do not explicitly require the application and/or adaptation of existing methods of economic analysis for justifying layaway lines.

DISCUSSION

Approach

The approach taken in this study has been to identify the shortcomings in the current method for justifying layaway lines; to review and evaluate military and industry methods for selecting among alternative investments; to develop a concept for performing economic analysis suitable to the problem at hand; and to develop the forms and instructions necessary for implementation of the methodology by the Army Materiel Command.

Assumptions

The major assumptions of the study are the following:

- (a) Each production package proposed for retention by layaway or other method will be subject to a separate application of the method.
- (b) All numerical data used in the economic analysis will be considered to be deterministic. That is, the effects of probabilistic variations or other uncertainties in cost estimates or requirements will not be considered in performing computations due to the complexity they would add to the analysis.
- (c) Mobilization requirements for the item(s) to be produced are assumed to be valid and as officially stated in the Army Materiel Plan or on AMC Form 1446, as will be the case for non-nuclear ammunition.
- (d) The time period to be used for economic comparison purposes will be the portion of the life cycle of the end item(s) to be produced that coincides with the retention of the end item in the Army supply system as a preferred item. That is, the end item will be type classified Standard A, and will be considered for further procurement.

In addition to the above assumptions, several constraints were imposed on the study effort by the sponsor with a view toward keeping

the improved methodology simple, to continue manual analysis for retention recommendations and to maintain as many existing procedures as would be compatible with solving the problems.

Scope and Limitations

This study concentrated on identifying the factors to be considered in a production capability retention situation and developing a means for relating and analyzing these factors manually. No attempt was made to optimize overall mobilization planning or to develop computerized methods because these subject areas have been, or will be covered in other DOD or Army sponsored studies.

The scope of this study did not include examination of the reasons for shutdown of an operating production line, nor did it consider trade-offs between costs of stockpiling end items versus retaining production equipment. Storage and funding problems were also excluded from the area of the study. The charge by the sponsor did not include any test of the proposed methodology or detailed description of changes in policy or revision in regulations that would be required to implement the new methods. It is also expected that application of the proposed methods will be limited to only those 1900 end items for which Headquarters, Army Materiel Command, and the Office of the Deputy Chief of Staff for Logistics have agreed that mobilization planning will be conducted. Due to the stated purpose of the improved method its application will be required only for those of the 1900 items whose production base contains some government-owned equipment.

CONCLUSIONS

The methodology developed in this study provides the Army with a detailed, two-phase procedure for performing a systematic analysis of all possible retention alternatives that should be considered when a production line expected to be reactivated in the event of mobilization is about to be shutdown. The first phase consists of a preliminary evaluation to verify the need for retaining the line and to quickly screen alternatives, using a standardized sequential list of questions, to eliminate those that are infeasible. The second phase is the application of a formal economic analysis, primarily cost oriented, to the alternatives remaining after the initial screening. Both phases

are heavily documented and are designed to be self-explanatory to personnel not thoroughly familiar with the subject area. Both phases will also provide a written record of the analysis for use as justification and documentation of the resulting recommendation to higher authority. The methodology also permits explicit compliance with regulations which require that an economic analysis be performed in the selection of a layaway line. It was not possible, however, to reduce the analysis to a simplified rule or technique due to the many factors involved in a retention decision.

METHODOLOGY FOR AN ECONOMIC ANALYSIS
TO IMPROVE JUSTIFICATION FOR RETENTION
OF MOBILIZATION PRODUCTION CAPABILITY

4a

ABBREVIATIONS

AAO	Authorized Acquisition Objective
AMC	Army Materiel Command
AMP	Army Materiel Plan
COCO	Contractor-owned, Contractor-operated
CONUS	Continental United States
DCSLOG	Deputy Chief of Staff for Logistics
DDPC	DCSLOG Data Processing Center
DIPEC	Defense Industrial Plant Equipment Center
DOD	Department of Defense
D to P	D-Day to P-Day (time period)
EPPL	Emergency Production Planning List
GOCO	Government-owned, Contractor-operated
GOGO	Government-owned, Government-operated
GSA	General Services Administration
HQ AMC	Headquarters, Army Materiel Command
IMPAM	Improved Methods for Planning Army Materiel
IFE	Industrial Plant Equipment
MIDA	Major Item Data Agency
MORSL	Mobilization Reserve Stockage List
MUCOM	Munitions Command
O&MA	Operations and Maintenance, Army
OPE	Other Plant Equipment
PEMA	Procurement of Equipment and Missiles, Army
PEQUA	Production Equipment Agency
FR&G	PEMA Policy and Guidance
RAC	Research Analysis Corporation
RVP	Reutilization Value Percentage
SAMPAM	System for Automation of Materiel Plans for Army Materiel

Chapter 1 INTRODUCTION

BACKGROUND

At various times in the past, and particularly during the post-conflict periods following World War II and Korea and in the current Vietnam slowdown, the Army has shut down operating production lines consisting wholly, or in part, of government-owned IPE. These shutdowns have resulted from normal contract expiration, termination, or cancellation. At such times decisions have had to be made as to whether and in what manner the production capability represented by the government-owned equipment should be retained or laid away for possible future reactivation.

The purpose of Army industrial preparedness or mobilization planning is to "insure that the facilities and required industrial plant equipment (IPE) are either on hand or attainable within an acceptable time frame."¹

As described in Army Field Manual 38-7, mobilization planning "assumes the outbreak of a limited or general war at some time in the future. The target date toward which this planning is oriented is called M-Day, or mobilization day (D-Day coinciding). On this day, two sets of programs are set in motion: First, the military forces in combat theaters will begin to consume materiel at intensified combat consumption rates. Second, the mobilization production base will be activated and will begin to produce the additional materiel required to replace combat losses."²

Mobilization planning can provide for post M-Day requirements in two ways. It can build up and/or retain a mobilization production base of specified capacity, or it can stockpile in mobilization reserves

sufficient supplies and equipment (called D to P stock) to support the post M-Day forces. Usually a combination of these two approaches is used, depending on the type of commodity or equipment. Stockpiling is the more costly of the two approaches but it insures the availability of required items.

The mobilization production base is usually established by retention in reserve status or "layaway" of individual items of government-owned IPE, or even complete industrial facilities, that are essential for mobilization production but are not needed to meet current peacetime requirements. There are several types of layaway. Equipment may be maintained at a government or contractor's plant in a high state of readiness (active base package). It may be given limited preservation and remain in place in the plant, requiring only deprocessing, hookup, and turn-on (standby line). It may be preserved for long-term storage and stored at the plant site or removed to a nearby or central storage point (package plant). Combinations of these methods of layaway are also used.

Production equipment may also be retained as part of the mobilization production base by selling or leasing equipment not currently needed to contractors, with the proviso that it be returned to government use within prescribed limits in the event of a national emergency. Several other lesser-used alternatives exist for retaining production capability for mobilization purposes. All the alternatives presently considered by the Army for retention purposes are listed below. Their inherent conditions, advantages and limitations are described in App A.

Alternatives for retention of production capability:

1. Sale of IPE to current contractor, with national security clause
2. Lease of IPE to current contractor, with national security clause
3. Rent free/maintenance exchange with current contractor
4. Sale of IPE to another producer, with national security clause
5. Lease of IPE to another producer, with national security clause

6. Rent free/maintenance exchange with another producer
7. Active base layaway
8. Standby layaway
9. Package plant layaway
10. Some combination of two or more types of layaway or sale or lease
11. Government leasing of contractor-owned equipment

PROBLEMS

When a decision has been made to close a production line consisting wholly or in part of government-owned IPE, the Commanding General, U. S. Army Materiel Command (CG, USAMC) must make a recommendation as to whether there is a need to retain that production capability under AMC control for later reactivation, either before or after M-Day, to renew production of the items produced by that line. In the event that there is a future need, all the alternatives listed above and discussed in App A are open to the Army as a means of retaining the desired production capability. With defense budgets currently being reduced, the CG, AMC must be able to justify and document his selection of an alternative for review and approval by higher authority. The selection must have a sound economic basis that is consistent with planned mobilization requirements and the budgetary environment. This is of particular importance when some type of layaway is the alternative selected because layaway action must be approved at the Assistant Secretary of Defense level. The reason for the high level approval is that it is MOD policy to maintain government ownership of the means of production at the minimum level necessary to satisfy mobilization requirements.

Documentation for requesting approval of layaway packages currently involves use of only two forms:

(1) Format A is a layaway package fact sheet used to request authorization for a project from higher level authorities (see App B).

(2) Exhibit P-17 (Parts I & II), Layaway and/or Redistribution Project RCS CSGLD-1126 (21), is used to request funding for a project (see App B).

The deficiencies found in these forms were of primary importance to the development of the methodology described in this report.

Discussions with several of the AMC major subordinate commands and the higher levels of authority indicated that applicable procedures for these forms were closely followed. However, these present procedures start with the premise that a layaway package is necessary and should be requested. They contain no indication that all other alternatives were considered prior to the decision for a layaway, nor is there any indication as to how the command arrived at the layaway decision. There is no provision in either Format A or Exhibit P-17 for a formal comparison of candidate alternatives that would help justify a recommendation on an economic basis. The present forms only request approval for a layaway action, indicate its location and extent, and substantiate the cost involved.

It was apparent from the review of the present procedures for requesting layaway approvals that what is needed is a formal method for comparing and analyzing all the possible alternative means by which an AMC command could retain production capacity for mobilization production purposes. In addition, this method should have an economic basis that would serve to adequately identify and assess applicable costs and possible differences in benefits to justify the decision and also provide a written record of the justification procedure for any required higher level reviews.

An additional problem is that reactivation and deactivation of production facilities is an unscheduled cyclical activity which occurs primarily during periods of conflict. Personnel of the AMC are therefore not continually exposed to this type of activity. This situation requires that any method developed for selecting alternatives be as straightforward as possible and be well-documented in easy-to-follow steps to facilitate application.

The problem facing AMC reduces itself to essentially one question: How may the choice between retention alternatives that will meet future mobilization production requirements be made on the basis of sound economic analysis and best be documented for higher level review?

OBJECTIVES

The above question posed two primary objectives for the study:

(1) Develop an improved economic analysis method for use by mobilization planners at AMC to compare and select in a relatively routine fashion, from among all possible retention alternatives, the one that will best satisfy future mobilization production requirements. Prepare detailed forms and instructions and recommendations for implementation of the proposed method. Forms and procedures should be well-documented and designed for ease of application.

(2) Attempt a reduction of the economic analysis method to a simplified rule or technique to facilitate very rapid application by personnel of the AMC.

An additional task addressed in the study was to determine if any data in addition to the results of the economic analysis and those required by existing regulations should be supplied to support layaway funding and authorization requests.

APPROACH

The approach taken in achieving the foregoing objectives was to:

(1) Identify shortcomings in methods, procedures, and forms presently used to request authorization and funding and to justify layaway lines.

(2) Review and evaluate DOD, Army, and AMC literature on industrial readiness and production base planning and support to determine if available information was being used to support requests for layaway packages.

(3) Review and evaluate other completed or ongoing military sponsored studies involved with improving various aspects of mobilization production planning to determine their relationships to the problems of this study.

(4) Review and evaluate military and industry methods for selecting among alternative investments and determine the suitability of methods and cost factors for this study.

SYNTHESIS OF CONCEPT FOR PROPOSED METHODOLOGY

A concept for the proposed improved methodology was partially developed from current military and industry practices involving economic analysis and analysis of alternative investments. The philosophy of economic analysis for proposed investments, as embodied in the

objective and definition stated in military documents on this subject,^{3,4,5} was found suitable for the purposes of this study. A rationale for the concept may be stated as follows. It was first necessary to check current mobilization requirements to determine if there was actually a need to retain any production capability for future use. This could be accomplished by reviewing certain planning documents and making sure they were up-to-date. Next, all possible retention alternatives had to be listed for review and analysis.

The factors that enter into the analysis were then identified. These were found to be: capability of the alternative to meet but not exceed mobilization requirements with regard to both quantities and production schedules; various cost factors such as acquisition of reserve stocks, storage of reserve stocks, physically preserving, removing and storing plant equipment, reactivating stored equipment; leadtime to reactivate existing contracts and planning agreements with producers; interest of producers in acquiring government-owned equipment; need to support certain producers or retain cadre of personnel; special physical characteristics of the existing production facilities or equipment; value and condition of the IPE; future status of the end items to be produced with regard to procurement and replacement; current stocks of end items and/or substitute items; peacetime consumption rates for the end items; limitations on acquisition of reserve stocks and several others of lesser importance.

Having identified the factors involved it was then necessary to devise a means for recording and analyzing them. For the cost factors Format A (not the same form as the layaway request, see App C) was adopted from the military documents^{3,4,5} noted above as an analytical framework for comparing total costs of each alternative at the most highly aggregated level. Forms for more detailed backup cost analysis had to be developed and were made compatible with the Format A. Procedures were then written for performing the cost analysis.

Discussions with AMC personnel indicated that some alternatives could be quickly eliminated from contention because they were, for various reasons, obviously infeasible. Since it was desirable to restrict the detailed and time consuming cost analysis to as few alternatives as possible a series of questions was developed to be

applied to verifying the future need for retention, eliminating alternatives that would not satisfy requirements or were otherwise infeasible, and generally dealing with the non-cost-oriented factors. The questions were designed to provide a systematic, self-directing, standardized and documented examination of most of the factors not covered in the cost analysis. Those factors remaining (differences in benefits) were to be described in a space provided on the cost analysis forms. No attempt was to be made to trade off between various factors or optimize costs versus benefits because of various constraints imposed on the study by the sponsor (see Assumptions).

It was decided to perform the proposed economic analysis in two successive steps or phases, as shown in Fig. 1, to provide flexibility and minimize the work required. Phase I would occur prior to the detailed cost analysis and would be a preliminary evaluation aimed at eliminating quickly and in a routine fashion, those alternatives that do not satisfy mobilization requirements and may easily be determined not to be feasible for a given shutdown situation. This procedure would reduce the scope and effort required and possibly even the necessity for the formal cost and benefit analysis that comprises Phase II of the proposed methodology. Procedures were then devised for distributing copies of the analysis to effect the documentation and provide the justification desired.

The improved methodology was designed to assist the using command in preparing retention recommendations on a standardized and systematic basis, to insure that all alternatives, costs, and other factors bearing on the problem are given consideration. The forms developed are evidence of the process, thoroughness, and results of the analysis and will serve as justification for recommendations made to higher authority. The methodology, however, addresses each retention decision individually and there are other aspects of its scope and limitations that are discussed later in this chapter.

ASSUMPTIONS

The major assumptions of the study are the following:

- (1) Each production package proposed for retention by layaway or other methods will be subject to a separate application of the method.

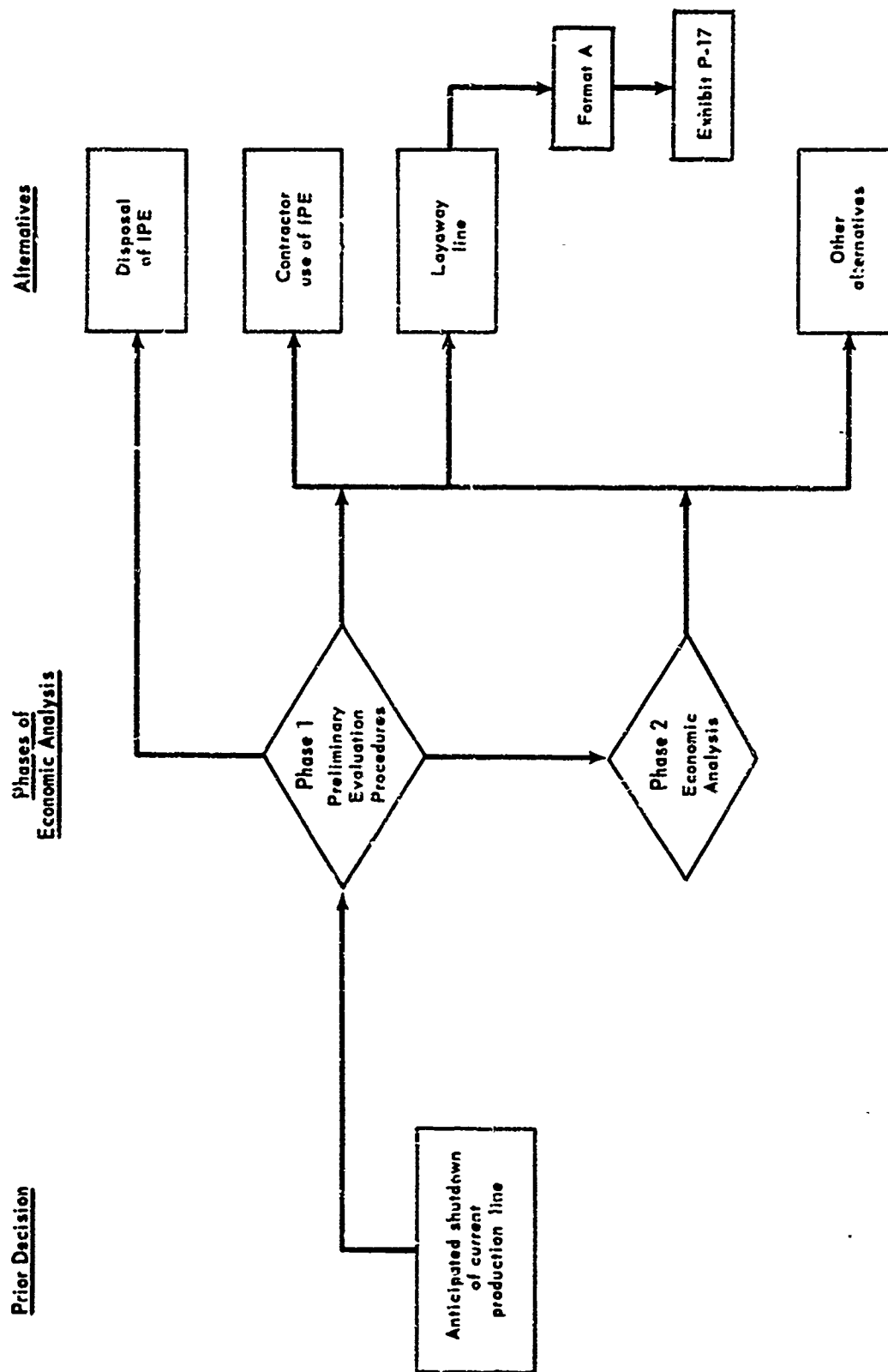


Fig. 1—Concept for Economic Analysis

This approach may not result in optimal use of the facilities. However, the sponsor's direction that the analysis be performed manually requires that it be kept as simple as possible.

(2) All numerical data used in the economic analysis will be considered to be deterministic. That is, the effects of probabilistic variations or other uncertainties in cost estimates or requirements will not be considered in performing computations due to the complexity they would add to the analysis.

(3) Mobilization requirements for the item(s) to be produced are valid and as officially stated in the AMP, or on AMC Form 1446 as in the case of non-nuclear ammunition. This assumption provides an officially approved base-point for the analysis which is primarily outside of AMC and the scope of this study and is necessary for any determination of mobilization production needs.

(4) The time period to be used for economic comparison purposes will be, with respect to the end item to be produced, that part of the life cycle during which the end item is expected to remain in the Army supply system as a preferred item. That is, the end item will be type classified Standard A, and will continue to be considered for further procurement. The rationale for this assumption is given in Chap. 3.

In addition to the above assumptions, several constraints were imposed on the study effort by the sponsor, and these follow:

(1) The methodology is to be used only when a major subordinate command knows that a production line will be shut down at some future date due to expiration, termination, or cancellation of a contract. Analysis of the reasons for the shutdown will not be part of this study.

(2) Sufficient funds will be available for layaway purposes, if that is the alternative chosen. Although Operations and Maintenance, Army (OMA) funds for continued maintenance of stored equipment have been and will continue to be difficult to obtain, it is believed that it should not be the concern of a mobilization planner as part of this particular analysis. DCSLOG has indicated that no layaway has been refused due to lack of funds. This assumption also avoids the need to rank candidate projects as is done in capital budgeting in industry.

(3) Sufficient storage space will be available for stockpiling end items and/or storing plant equipment. Provision of storage space

is again an AMC problem and shortages of storage space will lead to differences in costs of storage. However, this problem is not assumed to be the concern of this study.

(4) Mobilization planning information and formats currently in use by the Army will continue to be used to the greatest extent possible.

(5) The economic analysis is to be performed at the major subordinate command* level of AMC, where retention recommendations are presently made, and where detailed information will continue to be available.

SCOPE OF STUDY

The study was limited to methodology that will assist mobilization planners in reviewing alternatives open to them after a decision has been made to shut down a production line. The reasons for such shutdowns are not a part of this study. The study concentrated on identifying the factors to be considered in a production capability retention situation and developing a means for relating and analyzing these factors manually. No attempt was made to optimize overall Army mobilization planning or to develop computerized methods because these subject areas have been, or will be covered in other DOD or Army sponsored studies.

The charge did not include a test of the proposed methodology or detailed description of changes in policy or revision in regulations that would be required to implement the new methods. A general statement of the extent of such changes has been provided in Chap. 3, however.

*AVSCOM	Aviation Systems Command
ECOM	Electronics Command
MECOM	Mobility Equipment Command
MICOM	Missile Command
MUCOM	Munitions Command
TACOM	Tank-Automotive Command
WECOM	Weapon Command

The proposed methodology is intended to be an aid to and not a substitute for the mobilization planner's judgment.

It is also expected that application of the proposed methods, although useful for any end item, will be limited only to those 1900 end items or critical components for which HQ AMC and DCSLOG have agreed that mobilization planning will be permitted and is feasible due to manpower limitations.⁶ Due to the stated purpose of the analysis its application will be further limited to that portion of the 1900 items whose production base contains some government-owned equipment.

LIMITATIONS OF THE IMPROVED METHODOLOGY

A number of limitations are associated with application of the improved methodology and these should be borne in mind by the user. Some limitations are the result of pre-existing laws and procedures beyond the control of this study, while others result from time limitations on the study and external constraints imposed by the sponsor.

The proposed methodology will not necessarily point to the selection of a single alternative as the most desirable choice. This may be particularly true when the full economic analysis is required to compare several alternatives. However, the method will display information from which the evaluator may make a choice, using his own judgment in weighing the information displayed against other factors that must be considered. Some of these factors have in the past been said to result from a lack of firm commitment at higher levels of authority as to policies to be followed and dollars to be expended in industrial preparedness planning. Other factors may include the loss of an experienced cadre of personnel or a disgruntled contractor.

No explicit attempt has been made to examine in detail the tradeoffs that may be made between the cost of acquiring D to P stock versus the costs of various types of layaway methods, although costs for both of these factors have been included in the analysis. There has been no optimization in using the alternatives, either separately or in combination, only an examination of the production capability to be retained to produce the end items and critical components for which it was assembled. The optimum multiple use of laid away and active facilities for other than planned items has not been considered. Consideration

has not been given to the fact that the fixed costs of a GOCO facility are constant and, on a cost-plus contract basis, if one line is shut down the remaining lines must then carry all the fixed costs. Optimal balancing of mobilization planning would require the use of a computer and complex mathematical models that are beyond the assigned scope of this study task.

There may be limits on how far the using command may go in evaluating certain alternatives. This is particularly true where sale or lease agreements are to be negotiated with contractors. Such agreements would bring income to the US Treasury rather than incur an expense, but the red tape and time delays imposed by existing legislation more often than not abort attempts by commands to follow these alternatives. It behooves HQ AMC and higher levels of authority to push for revisions in the laws that would facilitate greater use of these alternatives.

As stated in the assumptions, all the numerical data proposed for use in the economic analysis are assumed to be deterministic. No allowance is made in the computations for probabilistic variations or uncertainty in the cost or requirements figures used. Variations and uncertainties do exist, however, and decision-making could undoubtedly be improved if a means were provided for their inclusion in the method in the future. A constraint also stated that sufficient funds and storage space would always be available for layaway purposes as these areas were not primary ones for mobilization planners. However, funding and storage problems are very real ones that will have to be dealt with within AMC and other sections of the Army, although they have not been considered in this study.

Finally, the Phase I preliminary evaluation procedures are not yet considered to be exhaustive and should be reviewed by users periodically on a formal basis. It is entirely possible that changes in external documents such as the PP&G could substantially affect and lead to a more desirable sequence of questions in Phase I. Practical experience in using Phase I might also dictate revisions.

Chapter 2

DEVELOPMENT OF ECONOMIC ANALYSIS METHODOLOGY

RESEARCH CONDUCTED

This chapter briefly describes the early research efforts of the study that were necessary to direct the development of an economically-oriented methodology tailored to the needs of the AMC in analyzing retention alternatives. The retention situation was similar to other military and industrial investment situations in that expenses over a number of years would be involved in retaining the desired production capability to satisfy future mobilization requirements. However, since any alternative exercised would have to meet mobilization requirements (retaining production capability in excess of requirements is prohibited by DOD regulations), any alternative chosen would provide about the same level of benefits in terms of retained production capability. Some differences in production capability will exist, however, since exactly the same items will not be retained by every alternative, items are replaced if worn out through use, and leadtime to bring the IPE to operational status differs between alternatives.

The retention situation is also different in that there are no annual returns or profits, no present alternative that might be continued, no annual savings (although the total cost of one alternative may be less than others), taxes and depreciation do not enter the analysis with government ownership and the dollars all flow out, except for the leasing alternatives. Also, the situation does not match any of the applications for "Economic Analysis of Proposed DOD Investments" stated in Ref 3 (para III.B.2). In addition, no replacement of existing items is involved, which eliminates a common application of economic analysis in both industry and military production areas.

A thorough review was conducted of DOD, Army, and AMC documents pertaining to current mobilization and industrial readiness policies and procedures to determine their adequacy as applicable guidance for layaway lines. As stated in Chap. 1, the current procedures were found to lack: (1) a verification of the latest mobilization requirements, (2) a formal type of comparison and analysis of alternatives, (3) an economic basis for recommendations, (4) a means for examining all possible alternatives, and (5) a written record of the decision-making process that would supply documentation and could be used for justifying recommendations. In addition, current procedures and problems of layaway and industrial readiness were discussed with personnel of various AMC commands and organizations and with DCSLOG to isolate information sources and existing problem areas.

Considerable additional research of both military and industry sources was made to establish specifically the objectives for the improved methodology, its concept, its contents, and its format. These sources are listed in the general bibliography. The intent was to assimilate the best current industrial and military practices applicable to the problem.

The research included military documents on proposed investments, replacement of machine tools, costing and pricing, and production base support programs. A parallel review was made of many books and periodical articles published during the last twenty years. These covered capital budgeting and methods for analyzing and ranking alternative investments for industrial firms. A literature search was also made for methods used to select investments and perform cost/benefit analyses for public investment purposes, particularly water resources, and to a lesser extent weapons systems.

The selection and use of possible cost elements for the economic analysis was explored with representatives of industry and government to determine the availability of applicable data. The results from selected areas of this intensive research effort led to the concept for the economic analysis methodology discussed in Chap. 3. A brief review of these results follows. For purposes of brevity only those sources found genuinely useful are discussed, and these only briefly, to indicate the origin of some of the ideas incorporated into the proposed methodology.

Table 1 summarizes the evaluation of military and industry sources reviewed and lists those methods adapted or rejected for use in this study.

MILITARY SOURCES

The first military sources reexamined were the two existing forms for making and documenting layaway requests, Format A and Exhibit P-17 (see App B). Since, as previously stated, neither form contains provisions for comparing alternatives, their usefulness to the improved methodology was limited. However, Exhibit P-17 (see App B, Part II, Item 14) contains a section detailing cost data for layaway actions and this information was found suitable as an input cost for the Phase II economic analysis (see Chap. 3).

Three military documents previously noted as dealing with the economic analysis for proposed military investments proved most useful. These documents were DODI 7041.3³, AR 37-13⁴, and AMCR 11-34⁵. They contain a philosophy for economic analysis that is suitable but requires tailoring to the practical needs of the mobilization planning situation. Several ideas from these documents were adopted. The first is the general format for making a cost analysis. This is called a Format A in all three documents and should not be confused with the Format A previously mentioned, which is used only for layaway authorization. A sample of the cost analysis Format A is supplied as App C. It contains provisions for comparing costs of alternatives over a variable length of time considered to be the economic life of the project. It uses another idea that has been adopted, that of discounted annual costs or, as it is also called, the present worth, or present value concept.

The discounted-cash-flow method recognizes that time has an economic value, i.e., a dollar today is worth more than a dollar obtained or spent in the future because it may be invested and accrue interest at a specified rate. It is also more accurate than other investment analysis methods because it is sensitive to the timing of outlays and forces thinking about the whole life of a project.

Discounting enables the analyst to evaluate the time-phased profiles of the cost flows for each alternative as if they all occurred at one point in time (at the present time), rather than spaced over the

Table 1

SUMMARY OF MILITARY AND INDUSTRY METHODS EXAMINED

<u>Area</u>	<u>Methods Adopted</u>	<u>Methods Rejected</u>
<u>Military</u>		
Layaway Package Requests	Layaway costs from Exhibit P-17	Format A & remainder of Exhibit P-17
Economic Analysis for Proposed Investments	Arrangement of Format A (Cost Summary) Discounted total costs	Formats A-1 and B
<u>Industry</u>		
Capital Budgeting and Investment Analysis	Discounted total costs (present value)	Rate of return Payback period Break-even curves Benefit/Cost Ratio

economic life of the alternative. In this way the alternatives can be compared from a cost standpoint, even though they may have different time-phased cost profiles. "In effect, discounting makes it possible to evaluate and to sum, in a logical manner, costs which occur at different points in time."⁷ The discounting method is suitable for adoption by this study because layaway expenses will take place over extended variable time periods, but must still be compared.

Use of the present value (discounting) technique is required by the DOD for investment analysis (Ref 3, para 5.C). This same reference (Ref 3, Encl 4, para II) explains the reasons for its prescribed use and the effects it may have on the results of an economic analysis. In the same document (Ref 3, para 5.D) the use of an annual interest rate of 10 percent is prescribed for discounting purposes. This rate may be simply applied by multiplying the cost incurred during any year by a discount factor for that year that is derived from use of the 10 percent interest rate. The result will be a future annual cost discounted to its present value. A table of discount factors to be used in Phase II of the improved methodology is supplied in App F.

Two additional analytical formats contained in references 3, 4, and 5 were rejected. Format A-1 was rejected because it deals with cost differentials between a present alternative and a proposed alternative, and in the retention situation there is no present alternative. Format B was rejected because it was believed to contain unnecessary detail in describing differences in benefits in the retention situation where all alternatives will serve to retain the desired production capability, thereby providing approximately the same benefits in terms of production quantities but perhaps not in terms of response or reactivation times. It was believed that the response time differences could be adequately described without resort to a special additional format for accomplishment.

INDUSTRY SOURCES

The two methods most widely used in industry for capital budgeting and analysis of the profitability of proposed investments are the rate of return, or profitability index, and the payback period. Neither of

these was believed suitable for the purposes of this study because they require as inputs a cash flow generated from sales or savings, and such an input, or profit, does not exist in the retention situation addressed by this study. The concept of comparing discounted total costs, which is used by industry as well as the military, appears to be a preferred method and was therefore adopted.

Industry also uses breakeven curves, but there appeared to be too many cost parameters in the retention situation to make that approach feasible. Another method used by industry, and also in analysis of public investments for water resource development, is the benefit/cost ratio. As several authors have pointed out,^{8,9} this ratio may be misleading and perhaps too simple. There was a possibility that it might be used with caution as a simple technique or rule-of-thumb, which was one of the objectives of this study. Use of a simple rule could be practical if some of the primary cost factors in the Phase II economic analysis were very large and overshadowed all other costs, permitting the analysis to be reduced to such a ratio. Considering the many factors involved in a retention situation this possibility was rejected as being too risky.

Other parts of the improved methodology that did not stem from the above sources, such as the detailed forms for performing the cost/benefit analysis of Phase II and the entire idea and questionnaire used in Phase I, were devised by the study team to satisfy the needs of the problem.

Chapter 3

DESCRIPTION OF PROPOSED ECONOMIC ANALYSIS METHODOLOGY

RATIONALE ACCOMPANYING THE PROPOSED METHODOLOGY

The method described in this chapter was designed to quickly sift through the alternatives for retaining production capability for mobilization purposes and present an economic comparison of the feasible alternatives for use by the cognizant AMC major subordinate command in making a retention recommendation. At the same time, the proposed methodology is intended to provide a written record of the analysis to be used for justifying the recommendation to higher authority.

Use of the methodology will begin at least 90 days prior to the anticipated shutdown date for an operating production facility. Using Phase I of the method, the mobilization planner at the cognizant AMC major subordinate command will verify the need to retain the production capability for future mobilization purposes or other needs. Use of Phase I will also enable the planner to eliminate any infeasible retention alternatives from the list of possibilities. If only one alternative is left the completed Phase I analysis will document and justify the decision process for higher authority. If the surviving alternative is some form of layaway action the command will proceed with the required submission of a Format A and Exhibit P-17 to request the layaway, supplemented by a copy of Phase I as justification. If the surviving alternative does not involve layaway, Format A and Exhibit P-17 are not required.

If two or more alternatives survive the Phase I preliminary evaluation they will be subjected to the additional Phase II analysis of comparative costs and benefits. The results of the Phase II analysis, displaying costs versus differential benefits, may then be weighed by the cognizant command, as their knowledge and experience dictates, in making a recommendation for a retention alternative. Format A and

Exhibit P-17 may then be submitted, depending on whether a layaway action is involved. The improved methodology is designed to precede and supplement existing layaway procedures, not replace them. The improvement derives from the formal verification of need, examination of all alternative possibilities on a systematic and standardized economic (cost/benefit) basis, and formal recording of the decision process for later review by higher authority, if necessary.

ALTERNATIVES FOR RETENTION OF PRODUCTION CAPABILITY

The first question that must be answered by the Army when analyzing the implications of the anticipated shutdown of an ongoing production line is whether there is a need to retain the production capability for use within the foreseeable future to satisfy mobilization or other needs. If no need is foreseen, disposal of the equipment should obviously be made. Disposal of government-owned equipment is accomplished by declaring the equipment excess to Army needs and following procedures described in AR 700-43¹⁰, Chap. 2, Sections V and VI.

If a future need for a production capability does exist, retention of the equipment may be accomplished in one of several ways. Listed on page 7 are the major alternative ways described in App A and currently considered by the Army. These are all examined by the proposed economic analysis methods if, as a first step, they will satisfy mobilization requirements. The alternatives on page 7 are listed roughly in order of increasing cost to the government. Lowest cost alternatives are given priority consideration in the economic analysis to satisfy DOD policy of meeting industrial preparedness planning needs with a minimum outlay of funds by the government.

The lowest cost alternative, however, is not necessarily the best alternative. One should strive for a balance in terms of providing the necessary production capability within the required time constraints, with reasonably good assurance that the equipment will be maintained in satisfactory operating condition and not be unduly subjected to wear, deterioration, or sabotage. Other non-quantifiable factors such as the loss of trained production personnel, possible loss of a desirable planned producer or poor past experience with some producers should also be considered in making the final choice.

CONCEPT FOR PROPOSED ECONOMIC ANALYSIS METHODS

A two-phase analysis is proposed for selecting the best alternative from among the list of possible retention alternatives shown on p 7. The first phase is a very important one and consists of the use of a questionnaire to make a preliminary evaluation that verifies the need for retention and quickly screens the alternatives to eliminate those that are considered infeasible. If only one alternative remains after completion of Phase I, there will be no need for Phase II. The second phase is the application of a formal economic analysis, primarily cost oriented, to the alternatives remaining after the Phase I screening. Phase I contains several sets of questions related mostly to factors not quantifiable in dollar terms. The formal Phase II economic analysis examines in detail the comparative costs of two or more alternatives and also notes any differential in the total production capability, leadtime or other special conditions attending their benefits, with regard to the intended purpose of the retention. Both steps provide a written record of the analysis made in arriving at a recommendation, whether it be made quickly using only the Phase I preliminary evaluation or after the more detailed Phase II economic analysis is completed. In either case the written record satisfies the need to supply justification and documentation of the decision-making process to higher levels of authority, particularly when layaway authorization and funds are to be requested.

PHASE I, PRELIMINARY EVALUATION PROCEDURES

A complete sample set of the Phase I preliminary evaluation procedures has been provided in App D. Phase I has several purposes. The first is to quickly establish whether or not a need exists to retain the production capability of the production package to: (1) satisfy future mobilization requirements for one or more end items or critical components, (2) be available for reactivation at some time in the future to replenish the Authorized Acquisition Objective (AAO), or (3) produce future requirements for repair parts. This purpose is satisfied by the first section of Phase I. This section forces the planner to check that he is using the most recent requirements data and determine that there is, in fact, a future requirement for the end item produced by the

facility to be shutdown. If there is no need to retain the production capability, analysis is to be stopped after completion of Sections 1 and 7 of Phase I and existing procedures for disposal of the equipment are to be followed. Section 7 supplies additional writing space for cross referencing comments or information that could not be fitted into the limited space between questions in the previous sections and requires a certification from the user.

If a requirement does exist to retain a production capability then Phase I serves the additional purposes of:

- (1) Reducing the scope of the Phase II economic analysis by eliminating some of the alternatives that are obviously not feasible, and
- (2) Establishing the availability of basic information needed to perform the comparative economic analysis, and
- (3) Alerting the cognizant major subordinate command to the existence of special circumstances requiring its review and/or action, or
- (4) Making it unnecessary to perform the detailed Phase II economic analysis comparison by quickly eliminating all but one alternative.

Sections 2 through 5 of Phase I (App D) have been designed to meet the intent of purposes (1) and (4) above, that is, to assure that all alternatives to be further considered will meet mobilization requirements and to eliminate alternatives and reduce the scope of or need for the detailed Phase II economic analysis. Section 2 contains questions that are applicable to all alternatives, regardless of the type of production facility involved. Section 3 deals with government-owned, government-operated (GOGO) facilities, such as arsenals. Section 4 deals with government-owned, contractor-operated (GOCO) facilities and Section 5 with contractor-owned, contractor-operated (CCCO) facilities only.

The questions in Sections 3 through 5 differ from each other somewhat and are ordered differently depending on the type of facility. Many questions are directed toward uncovering special physical aspects of the production package and production leadtime limitations that would preclude certain alternatives from consideration. Other questions are

directed primarily toward determining the interest and suitability of the current producer or other possible producers in purchasing, leasing, or otherwise maintaining use of the government-owned equipment.

Section 6 of Phase I serves purposes (2) and (3) by asking questions that will quantitatively determine mobilization requirements, planned production capabilities, current asset position, and peacetime consumption rates for the end item or items for which the production package is to be retained. It also records the future procurement status of the end items and their possible future replacements, the status of the government-owned production equipment with regard to its age and operating condition, its production capabilities in relation to requirements, and its adaptability to producing possible replacement items. In addition, there are several other information items pertaining to design changes and procurement and storage limitations on both the end item(s) to be produced and the production equipment. The answers to some questions may require a security classification and this is the responsibility of the user. Instructions for use of the preliminary evaluation procedures by personnel of the various major subordinate commands are given in App D.

Routing of the completed Phase I analysis to higher authority is covered later in this chapter.

It is expected that many retention decisions will be amenable to resolution by use of Phase I only, without resorting to the additional Phase II economic analysis. It is also anticipated that the study version of Phase I given in App D will be subject to various revisions following field experience in its use. It will undoubtedly be possible to sharpen the questions as a means to eliminate alternatives and to accommodate special situations as they occur. However, it is not the intention of the checklist to force a decision to be made, but to assist its user to arrive at a decision through the sequential application of logical thought processes and a standardized set of considerations, as reflected in the questions asked. In cases where more than one alternative still remains after the preliminary evaluation, the cognizant command will examine and compare these alternatives on a cost/benefit basis using the procedures for Phase II as described below.

PHASE II, ECONOMIC ANALYSIS PROCEDURES

The economic analysis procedures proposed here are of a type similar to those described in AR 37-13⁴ and AMCR 11-34⁵ and are primarily cost oriented. A complete set of the Phase II procedures and forms is provided in App E. The primary purpose of the economic analysis is to provide a means for the command to make a selection from among the alternatives remaining after use of the Phase I questionnaire. All remaining alternatives should provide about the same mobilization production capability as to quantities to be produced and schedules to be met, or they would have been eliminated by the Phase I procedures. A secondary but equally important purpose of the economic analysis is to record the selection process as supporting documentation for justification of the decision being recommended to higher authority.

Figure 2 depicts the steps that are required in performing an economic analysis. If there is more than one alternative, Cost Backup Sheets are assembled in the first step for each cost factor to be included in each alternative. In the second step the information for each alternative is gathered together on a Summary Cost Sheet. In the third step, discounted total costs for each alternative and any reasons why that alternative will provide benefits differing from other alternatives, are transferred to an Alternatives Comparison Sheet. The Alternatives Comparison Sheet will then display the essential information for selecting the most desirable course of action.

Alternatives Comparison Sheet

The Alternatives Comparison Sheet, the most highly aggregated form used in the economic analysis, is a good starting point for description of the cost factors and other parameters selected for inclusion in the analysis. A sample of the Alternatives Comparison Sheet form is given in App E.* Its layout is similar to Format A of AR 37-13 and AMCR 11-34 (see App C). The form has a header containing the name of the submitting Army component, date of preparation, identification of end items and

*Samples of all the forms required for the Phase II analysis have been placed in App E so they may be viewed as a package and examined in close proximity to the detailed guidance for their completion given in the same appendix.

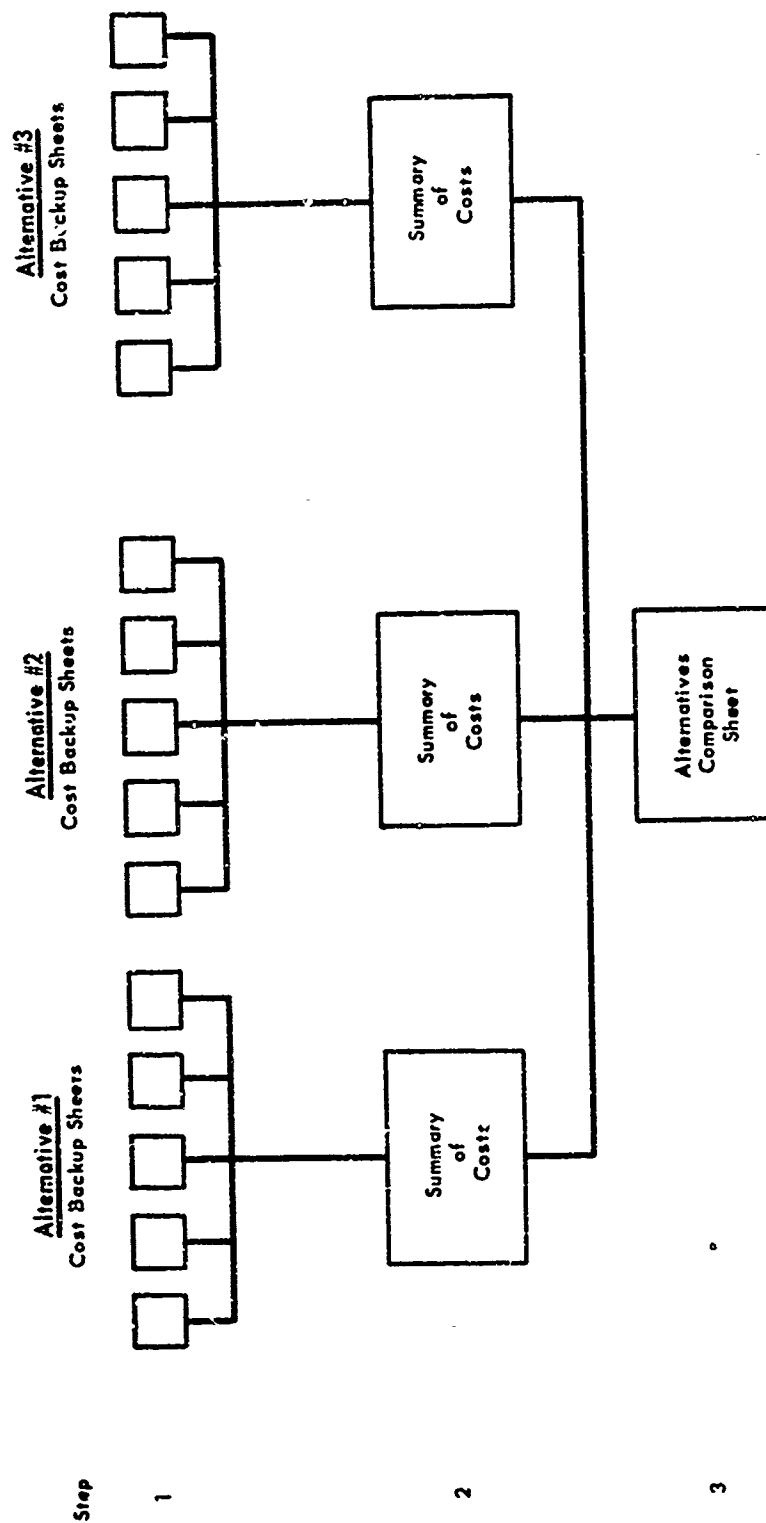


Fig. 2—Steps and Forms Used in Performing Phase II of the Economic Analysis

critical components the production package is to be retained to produce, and identification of all producers currently producing these items. The header information serves to identify parts of the same analysis and is basically the same for all forms used.

All forms described in this chapter are given as examples only, and are not intended to be copied explicitly by the using command as long as the information content is equivalent.

Time Period Used in Economic Analysis. Item 5 of the Alternatives Comparison Sheet identifies the project year in which a cost is incurred. The number of project years to be used is variable, as indicated by the letter N, and may be different for each economic analysis. Considerable thought was given to selection of a time period to be used for the analysis or "economic life" as it is referred to in AR 37-13⁴. Mobilization requirements are stated for five years beyond the current budget year in the AMP. However, some production lines remained in layaway status for seven or eight years prior to the Korean conflict and some for more than 10 years between the Korean conflict and Vietnam reactivation. Some lines have been in layaway status for more than 15 years since deactivation after Korea. It was suggested that the "life cycle" of the end item to be produced be used as the appropriate time period. However, the full life cycle includes time other than the period when the end item is being considered for further procurement, and retention of a production capability for an end item is not valid if the item is no longer to be procured. Therefore it was decided to use as the time period for the economic analysis that time during which the end item could be expected to continue in the Army supply system as a "preferred" item with type classification Standard A (see para 1.5 of AR 71-6¹¹ for definition).

Cost Factors Included in the Analysis. Item 6 of the Alternatives Comparison Sheet displays the major cost factors recommended for inclusion in the economic analysis, with space for additional factors as deemed necessary in the judgment of the submitting command. For each alternative examined, there is a separate column for recording the discounted annual cost for each cost factor. At this point it is pertinent to discuss the various cost factors and their reasons for inclusion and placement time-wise in the analysis.

D to P Stock Acquisition Cost. The purpose of retaining a production capability under Army control is to be able to meet mobilization requirements for various items during the post M-Day or D-Day period. (M-Day and D-Day are here assumed to be the same—the day mobilization and hostilities commence). If these requirements cannot be satisfied by current assets or commercially-owned and controlled sources then the Army has three options available: (a) issue a procurement contract for continuing "hot" (full) or "warm base" (minimum sustaining rate) production during peacetime; (b) layaway production capability or otherwise retain access to such capability via the national security clause (cold base); or (c) place items enable to long-term storage in mobilization reserve stockpiles own as D to P stock (P-Day is the point in time at which the post D-Day rate of production of an item equals or exceeds the rate of consumption of that item and continues to do so indefinitely). The mobilization requirement may be met by one or more of the three options. If fully satisfied by hot or warm base production at peacetime levels, no layaway of D to P stock is necessary. At the other extreme all three options may have to be exercised. This determination is made the capabilities of planned producers are entered on AMC Form 1446 (App G1), as required by AMCR 715-73¹², and mobilization production requirements are computed on the same form. Form 1446 is reviewed for the Phase I preliminary evaluation and the need for acquiring D to P stock is noted at that time.

The AMP may contain a limitation on the D to P stock that may be procured, depending on the type of commodity represented by the end item. Some commodities have no limitations, and the limitation on others may vary from time to time in accordance with FEMA Policy and Guidance¹³. Also, D to P stock acquisition may not occur over the full period of the economic analysis, although it is usually spread out as much as possible. In addition, D to P stock quantities may vary with the type of layaway considered and its associated production leadtime. Longer leadtimes require more stock. Regardless of the existence or lack of limitations on D to P stock acquisition the cost of this factor is a recurring cost that should be included wherever found appropriate by the submitting command.

Layaway Cost. The next cost factor to be included is the cost of physically laying away the production equipment to be retained. This includes the cost of processing for storage, plant removal, transportation, rehabilitation, and other relevant costs. Layaway costs, of course, are entered only under those alternatives that include a layaway action. Layaway actions are usually completed within one year, but for certain types of processing plants the costs may carry over into additional years and should be entered as applicable.

Holding Costs. Holding costs include storage and maintenance expenditures and allowances for deterioration, obsolescence, and losses due to accidental damage or pilferage. These costs will apply and must be computed separately for end items that are stored as part of D to P stock and IPE stored as a layaway package. Holding costs will apply during each year of the economic analysis time period until a layaway line is reactivated.

Reactivation Cost. The cost of reactivation of a layaway line is assumed to occur only at the end of the last year of the analysis time period. The study concluded that reactivation costs should be included in the economic analysis because a layaway line would have to be reactivated to provide the benefit for which it was retained. If one does not intend to reactivate in the event of an emergency there is no point in laying away a production capability. Inclusion of this cost at the end of the time period reduces its effect on the analysis to a minimum. However, if it is desired to base the analysis strictly on peacetime costs, including no wartime emergency costs, reactivation cost may be omitted for this reason at the discretion of the using command.

Other Cost Factors. Space has been provided in Item 6 of the Alternatives Comparison Sheet for other possible cost factors. Among these may be the cost for government leasing of contractor-owned production equipment, which is a remote but possible alternative, or the opposite, a dollar return to the government from sale or lease to a producer. There may also be costs incurred for modifying the production equipment to convert its capability for producing one end item to producing a similar end item that will be a replacement. This situation will occur when the remaining time for an item as a preferred

item is very short and it is desired to retain and convert the production capability for use in producing a new item. This cost should be entered for the year in which it is expected to occur, and the preferred time period for the new item should be added to the time over which the economic analysis is made.

In making a retention recommendation the decision-maker needs future and incremental costs for analysis purposes, not past, sunk common costs. Costs that should not be included are termination cancellation charges incurred, if these are the reasons rather than contract expiration, for shutdown of a producing line. Since these charges would be incurred regardless of the alternative chosen for retention of the production capability they are common and have no effect on the analysis and there is no point to including them. Any other costs, such as administrative costs, that would be the same for any alternative may be omitted for the same reason. Facility conversion costs or repair costs already paid for should also be omitted.

Item 7 is a line for entering the total discounted cost for each alternative for the full time period of the analysis. These total costs will be compared by the using command to choose the most desirable alternative for retention.

Benefit Differentials. Item 8 in the Alternative Comparison Sheet is a space for entering qualifying remarks pertinent to any of the costs included in or excluded from the economic analysis. This space should also be used to discuss any differences that might be expected in the benefits to be obtained from any of the alternatives that have not already been quantified in dollar terms. It is anticipated that any of the alternatives examined would provide about the same level of benefits in that the retained production capability would be almost the same regardless of how the equipment was retained, since any acceptable alternative must meet but not exceed mobilization requirements. There would be differences in reactivation leadtimes and costs, but any alternative providing an unacceptable leadtime would be eliminated by use of the preliminary questionnaire of Phase I. If there will be any differences in production capability between alternatives due to the actual IPE to be retained or the manner of retention, these should be noted under Item 8. Other benefit differentials may derive from the

command's past experience with producers, or possible loss of a producer or experienced personnel that might result from a particular alternative, or uncertainties associated with sale or lease alternatives.

Cost differentials would, however, be the primary basis for the economic analysis. Tradeoffs between costs and benefit differentials have not been formalized in the Phase II analysis, but the information is displayed on the Alternative Comparison Sheet to be weighed by the cognizant command, according to their experience and judgment, in making a recommendation.

Summary of Costs

A sample of the proposed form for summarizing the individual cost factors applicable to each alternative is in App E. The form identifies each alternative being analyzed (Item 5). It also provides (Item 7) one column for entering the name of applicable cost factors and three columns for determining the discounted annual costs for each cost factor. The annual cost is entered in 7a from the backup cost sheet previously prepared for each cost factor. The appropriate discount factor, 7b, which is always a number less than 1.000, may be selected from App F. The discounted annual cost, 7c, is the product of the annual cost and the discount factor. Totals for the entire time period are to be entered as Item 8. One of these Summary Cost Sheets is to be filled out for each alternative and will completely state the costs for and benefits to be obtained from that alternative. Only the discounted annual costs will then be transferred to the Alternatives Comparison Sheet.

Backup Sheet for D to P Stock Acquisition Costs

App E also contains an example of the kind of information that should be necessary to compute the D to P stock acquisition cost.

A separate computation of D to P stock cost will have to be made for each end item and critical component involved with the package being analyzed. Item 4 has space for entering the number of items involved. Item 5 will record any limitation on D to P stock acquisition if such a limitation applies for the items being computed.* Items 6 through 13

*D to P stock limitations are specified in PP&G in terms of months of level-off production. The months must be converted to quantity for use in the analysis.

require a computation of the total D to P stock required and a conversion of quantity to cost, based on: mobilization requirements, planned producer's capabilities, assets as of some point in time such as a postulated M-Day or the beginning or end of a funding period, and the unit cost per item. Most of the data will be available on AMC Form 1446. Item 14 is to be used for recording data sources. The cost from Item 13 is the only number that need be transferred to the Summary Cost Sheet.

Backup Sheet for Layaway Costs

The layaway cost information required in the sample backup sheet for layaway costs, App E, is basically the same as that called for in layaway project Exhibit P-17 (see App B), with some minor exceptions noted below. Item 5 identifies, if known, present location of the IPE to be retained and Item 6 indicates the year in which the costs will be incurred. If more than one year will be required for layaway, separate backup sheets should be used. The costs of the various elements of layaway shown in Item 8 are to be entered in the appropriate column of Item 7, according to the type of layaway being considered. There are six basic elements of layaway cost. The subelements grouped under Item 8(a) identify the number of items of different types that comprise the layaway package. The subelements grouped under Item 8(e) provide additional detail for the alternative of replacement rather than rehabilitation of some of the IPE in the package. Only lines 8(e) (3) and (f) (1) are different from the layaway section of the Exhibit P-17 form. Item 9 is the total layaway cost for each of the alternatives being considered and these figures are to be transferred to the Summary Cost Sheet.

Backup Sheet for Holding Costs

A sample of the backup information needed for holding costs is given in App E. Item 4 indicates whether the holding cost information on the backup sheet is for the end items in the D to F stock or for the IPE. A separate backup sheet will have to be made up for each set of holding costs. Items 5, 6, 7, and 8 all have a bearing on holding costs. In Item 7 the command may enter a percentage of the unit cost to be used as a simple estimator of holding cost as is done in FM 38-22¹⁴

for secondary items. AMC has supplied RAC, for use in another study, a figure of 15% to be used for holding costs for items likely to be airlifted overseas. This figure includes storage and handling (1%), loss and pilferage (1%), and obsolescence (13%)¹⁵. The percentage would vary with the type of commodity being considered but would be a rapid way of estimating the holding costs for end items. For certain types of ammunition it is believed by MUCOM that holding costs do not apply at all because storage depot operating costs are relatively fixed regardless of whether the warehouse is full or half-full. These cost elements must therefore be computed on the basis of the judgment of the submitting command and entered in Item 10, with a total at Item 11 which is then added to the total of IFE holding costs and transferred to the Summary Cost Sheet. The annual holding cost for end items may vary depending on the size of the stockpile.

As a factor in computing IFE holding costs, there may be very little deterioration or losses. As for obsolescence, it is believed there will be no obsolescence of the equipment if the design of the item(s) to be produced is not changed over the time period of the analysis. If the IFE is capable of producing the end item(s) at the time of layaway it will be equally capable of producing them upon reactivation, although perhaps not as efficiently as some new production equipment that might be available at that time. If the end item(s) design is expected to change, some provision may have to be made for obsolescence of the IFE.

Backup Sheet for Reactivation Costs

Appendix E contains a sample backup sheet for reactivation costs. In Item 4 the location of the layaway should be recorded as it will affect reactivation costs. The final project year to be noted in Item 5 will determine the discount factor to be used, and this factor is to be entered in Item 6. The basic cost elements for reactivation are shown in the first column, and costs for these elements may be entered as appropriate for each layaway alternative under the proper column in Item 7. Item 8 provides totals that are to be transferred to the Summary Cost Sheets. Reactivation may incur personnel costs as well as operating costs. Some reactivation costs may be difficult to estimate as they may

be included in procurement costs or may come in an overall package from a contractor. A possible guide would be the reversal of layaway costs.

Instructions for Completing Economic Analysis Forms

Detailed guidance for preparation of the Phase II economic analysis summary and backup analysis sheets is supplied in App E. It is entirely possible and very likely that the submitting command will assemble additional supporting data for the various backup data sheets described above. The contents, amount, and form of such additional data will be at the discretion of the command. Any necessary security classification of the information in Phase II is also the responsibility of the using command.

DISTRIBUTION OF ECONOMIC ANALYSIS FORMS

It is expected that there will be four levels of "users" for the products of the proposed methods: originators, checkers, reviewers, and approvers. A major subordinate command would be the originator and forward the forms, depending on the situation, to another agency (probably FEQUA) designated by HQ AMC to check and verify the information prior to further action. HQ AMC and DCSLOG levels would then review and forward the recommendations to the Assistant Secretary level for final approval/disapproval. The process leading to approval/disapproval is illustrated in Fig. 3 for four possible situations that are anticipated.

In the first situation a decision will have been made, by use of Sections 1 and 7 of the Phase I preliminary evaluation, not to retain the production package being shut down due to lack of mobilization or other requirements. In such a situation the originator would retain a copy of Sections 1 and 7 of Phase I for record and proceed with excessing and disposal of the production capability in accordance with existing procedures and regulations. Approval of such a decision is not necessary above the major subordinate command level.

In the second situation an alternative not involving a layaway action will have been chosen by use of Phase I only, without need for the Phase II detailed economic analysis. In this situation the submitting command will forward two completed copies of Phase I to FEQUA for checking and verification of the contents. If FEQUA questions the contents of Phase I, differences will have to be resolved with the submitting command.

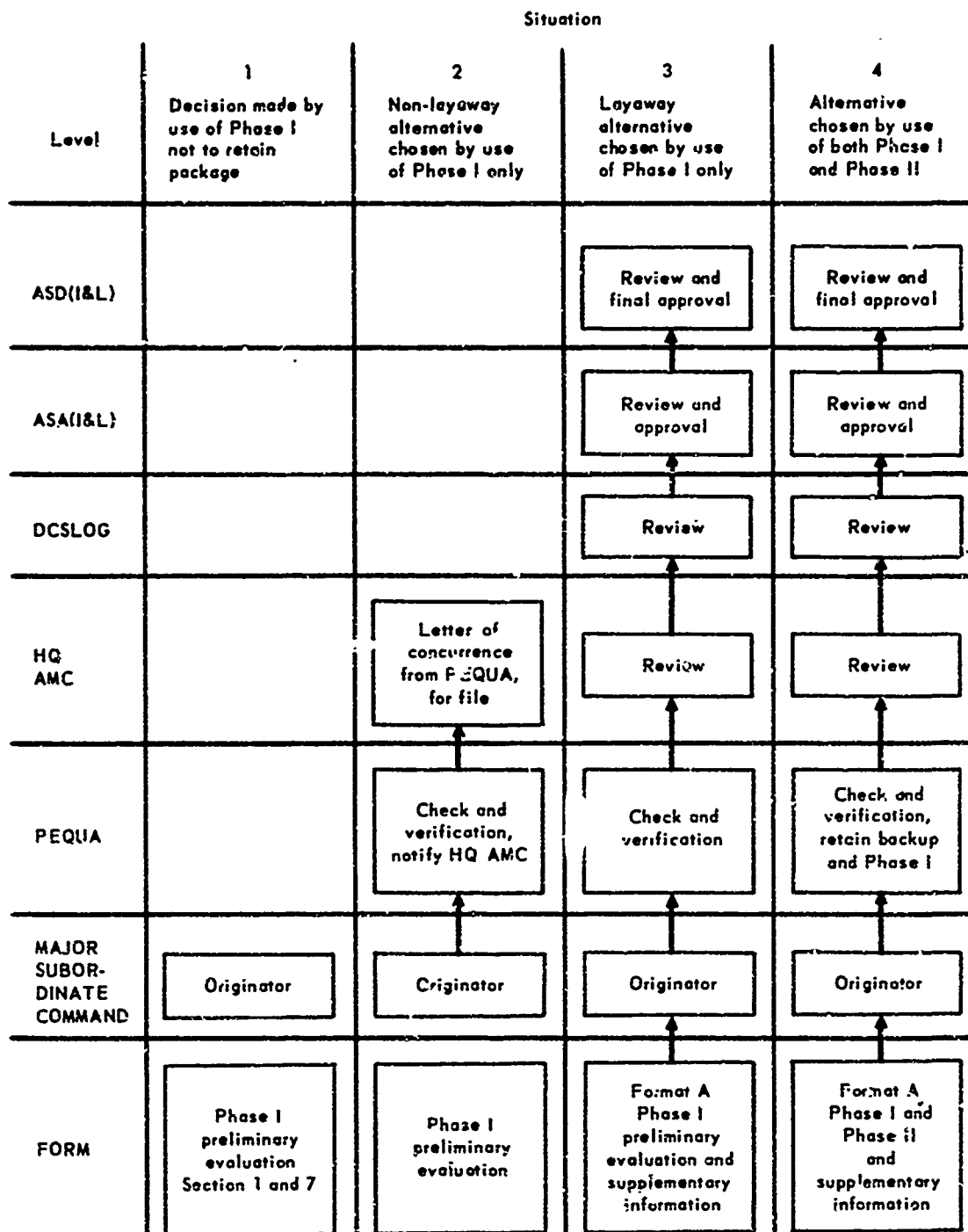


Fig. 3—Distribution and Approval of Economic Analysis and Layaway—Associated Forms

When PEQUA completes its verification of Phase I, and the alternative chosen does not require a layaway action, it will forward a letter to HQ AMC indicating concurrence with the decision. HQ AMC will retain the letter on file for record, and no further approvals at higher levels will be required. PEQUA will retain its copy of Phase I on file for five years or until the IFE package becomes active or is subject to disposal.

The third situation is similar to the second in that an alternative will have been chosen by use of Phase I only. The difference lies in that the alternative chosen will involve a layaway action that requires higher level approval. Therefore, for this situation the submitting command will forward six copies of Phase I along with the Format A layaway authorization request and any supplementary information (described on p 42) to PEQUA for checking and verification of the contents. Again, upon satisfaction of any PEQUA comments five copies of the completed Phase I will be sent with the Format A and supplementary information to HQ AMC for review. From AMC onward both documents will follow existing procedures for review and approval of Format A submissions at DCSLOG and the Assistant Secretary levels.

In the fourth situation use of Phase I will not have been sufficient to select an alternative, and the full Phase II economic analysis will have been completed. In this situation the submitting command will forward two copies of the completed Phase I and all the Phase II economic analysis forms, along with the Format A layaway authorization request and supplementary information to PEQUA for checking and verification of the contents. Again, upon satisfaction of any PEQUA comments, PEQUA will retain the completed Phase I and all the Phase II Summary Cost Analysis Forms and Backup Sheets. Only four copies of the Alternatives Comparison Sheet, which is the final result of the Phase II economic analysis, will be forwarded to HQ AMC and on through the review and approval lines of authority with the Format A layaway request.

In the very unlikely event that an economic analysis will include an alternative other than layaway and such an alternative is eventually selected, HQ AMC should receive the complete Phase I and Phase II economic analysis forms after check and verification by PEQUA, and no further reviews or approvals will be needed.

EFFECTS OF PROPOSED METHODOLOGY ON EXISTING PROCEDURES

If the improved methodology is accepted by HQ AMC, some changes in existing forms and procedures would have to be made to implement the economic analysis in the field. First, some minor revisions will be required to AMC Form 1446 (see App G1). These will include recording the date and source of mobilization requirements data, by user, below Section II or in Section V - "Remarks"; adding a column for the number of months to attain maximum capability to the list of current and planned producers and their production capabilities in Section III; and also noting in Section V - "Remarks," the date of the last survey of alternate sources made by the command (in accordance with the requirements of AR 700-43¹⁰, App 6, Item B), and the person responsible. These revisions may be made as shown in App G2. MUCOM HQ East is currently working on automating AMC Form 1446. If this development is successful and adopted by all AMC commands, the changes suggested in App G2 could be incorporated in any way that would be compatible with the new computer printouts.

Forms would have to be printed for the Phase I preliminary evaluation and possibly for the six data formats comprising the Phase II economic analysis, although the formats provided in this document could be used as examples by the using commands as they prepared their own analyses.

Certain Army regulations such as AR 700-90, AR 700-43, and AR 700-34 would have to be revised to require performance of the proposed economic analysis at least 90 days prior to an anticipated shutdown of an operating production line and prior to or in conjunction with submission of a Format A for layaway authorization. The regulations would also have to be revised to require the inclusion with Format A of the supplementary documentation described later in this chapter. Such revisions would have to be coordinated with the other services where necessary in the cases of joint regulations.

In addition, it will be necessary for HQ AMC to make formal arrangements with DIPEC to compute and submit to the cognizant command for inclusion with the Format A (layaway), as necessary, Reutilization Value Percentages (RVP's) for all items of IPE in a proposed layaway package. In connection with the computation of RVP by DIPEC it would

be desirable for the submitting command to forward to DIPEC for this purpose an estimate of the rehabilitation cost for each item of IPE requiring rehabilitation. Lacking such an estimate, DIPEC can compute the RVP using a fixed percentage based on past experience with other IPE, but the accuracy would not be as good.

Supplementary information that is suggested to accompany submission of a Format A for layaway purposes is as follows:

1. A copy of or reference to the AMC Form 1446 (revised per App G2) which contains the mobilization requirements and other basic data for the end items to be produced.
2. If the IPE to be laid away is in a contractor's plant, note the date that interim storage charges could begin, and the amount.
3. Add to the list of IPE an indication of which items have a Reutilization Value Percentage less than 30 percent.

Appendix A
ALTERNATIVES FOR RETENTION OF PRODUCTION CAPABILITY

Sale of IPE to Planned Producer	44
Lease of IPE to a Planned Producer	45
Rent Free/Maintenance Exchange with a Planned Producer	46
Active Pa. . Layaway	46
Standby Layaway	46
Package Plant Layaway	47
Government Leasing of Contractor-Owned Equipment	47
Disposal of IPE	47

SALE OF IPE TO PLANNED PRODUCER *

The National Industrial Reserve Act of 1948 provides measures for retention of an essential nucleus of government-owned industrial manufacturing plants and a national reserve of machine tools and related equipment to be used in times of national emergency. The National Industrial Reserve consists of excess industrial property, i.e., facilities or plant equipment that may be sold, leased or otherwise disposed of by the United States subject to the National Security Clause. This clause reserves for the government priority use of the equipment during a national emergency. The reserve was established pursuant to PL 883 by the 80th Congress. Under the Act the Secretary of Defense is responsible for determining which industrial plants under the jurisdiction of the Military Departments are not required and for reporting such property excess to the General Services Administration (GSA) for disposal. GSA effects sales under the Federal Property Services Administrative Act of 1949.

The difficulty with this alternative is the long time period required to declare all the equipment excess through existing procedures and the likelihood that some other service would claim some of the IPE prior to its release to GSA for sale, thus destroying the integrity of the production package. A bill (HR 168) reintroduced by Representative Gubser in 1971 may contain provisions that would facilitate the sale of government-owned equipment.

* Descriptions of sale, lease and exchange alternatives are extracted from information furnished by Mr. William Rogers, Hq, AMC.

LEASE OF IPE TO A PLANNED PRODUCER

The National Industrial Reserve Act of 1948 also provides that the Secretary of Defense may lease an entire plant and its equipment subject to the National Security Clause. The lease arrangement would be made by CJA for the Department of Defense. The National Security Clause terms and conditions usually obligate lessees as follows:

1. To assure provision of the capability to perform the functions for which the facilities have been designated, within 120 days.
2. To maintain designated facilities in accordance with sound industry practice while in active current use.
3. To refrain from making alterations or changes which would impair performance for assigned functions unless restoration could be made within 60 days.
4. To refrain from disposal of associated machine tools unless replaced with equivalent items.
5. To assure that any sub-lease will expressly provide for conveyance subject to the provisions of the National Security Clause.

The clause also provides for negotiation in the event of repossession, to arrange for contractual terms incidental to production requirements of the Military Departments. In such event the Government agrees to pay fair and reasonable compensation for:

1. Losses resulting from work in progress that cannot be completed, excluding profits.
2. Costs incurred to restore or alter as directed by the Government.

Leasing may also be accomplished, with less stringent requirements, under the Military Leasing Act of 1947. The leasing act authorizes the Secretary of a Military Department to lease real or personal property under his control whenever the Secretary considers it advantageous to the government.

This law was enacted primarily for leasing industrial production facilities, although it is not limited to this category of property. The law authorizes a lease for any purpose as long as its conditions are met. The major conditions of the statute require that:

1. The lease must promote national defense or be in the public interest.

2. Property to be leased is not excess property to the department.

3. Property to be leased is not for the time needed for public use, and

4. The lease must be revocable by the Secretary.

The lease entered into pursuant to this statute may be for a period not exceeding five years unless the Secretary determines that a longer period will promote the national defense or be in the public interest.

RENT FREE/MAINTENANCE EXCHANGE WITH A PLANNED PRODUCER

The Military Leasing Act of 1947 contains a special feature in that a lease may provide for the maintenance, protection, repair or restoration of the property by the lessee as a part or all of the consideration for the lease of such property. Under this provision there will be no cost to the government for maintaining the facilities during the time they are under lease. Also, the equipment does not have to be declared excess, the Military Department may negotiate directly with the planned producer and no National Security Clause is required.

ACTIVE BASE LAYAWAY

An active base package consists of government-owned industrial equipment not currently in productive use, located in an active facility and specifically retained to provide an immediate accelerated production capability in the event of an emergency, or to be used following a change-over to a new or modified end item.

STANDBY LAYAWAY

A standby line is a complement of installed IFE maintained intact in a reserve condition for future activation as a unit and, which when activated, is capable of producing a designated end item or items at a specific rate of production. A standby line may be retained in either a power-on or power-off condition. Power-on permits periodic recycling of IFE if necessary, and a slightly faster reactivation time.

PACKAGE PLANT LAYAWAY

Package plant equipment is a complement of government-owned IPE not currently in productive use which is assigned to a specific production program and which, as an entity or combined with other available equipment, will be capable of producing a military end item or component thereof at a specific rate. The equipment may be stored in a contractor or government-owned plant or at storage installations under government custody, in a national industrial reserve plant, or as part of the Department of Defense (DOD) or National Industrial Equipment Reserve.

GOVERNMENT LEASING OF CONTRACTOR-OWNED EQUIPMENT

In situations where no planned producer is willing to buy or lease government-owned equipment, and such equipment is mixed with contractor-owned equipment to provide a specific production capability that the government wants to retain, the government may elect to lease the contractor-owned equipment to maintain a capability. This alternative is undesirable and is contrary to DOD policy and objectives but may be used as a last resort rather than losing or impairing a production capability.

DISPOSAL OF IPE

If no valid reason is found for retaining a government-owned production capability then the IPE should be disposed of by declaring it to DIPEC as excess using existing procedures. If DIPEC has no requisitions for the equipment and no need to retain it for an industrial reserve the equipment will be distributed outside DOD or sold by GSA through existing channels.

Appendix B
CURRENT PROCEDURES FOR LAYAWAY PACKAGES

Format A	49
Inclosure for Format A	50
Exhibit P-17 (Parts I and II)	51

4215.18 (Encl 3)
Dec 10, 64

FORMAT A

PACKAGE PLANT, STANDBY LINE, OR ACTIVE BASE PACKAGE
FACT SHEET

1. Sponsoring Department _____
2. Bureau, Command, Corps _____
3. Military Item to be produced _____
4. Name and location of facility where the equipment would be used upon mobilization _____
5. Total number of items costing \$1000 or more in the line _____
6. Are all of the items of industrial plant equipment, required to produce the military item, government-owned? _____
7. If answer to 6 is no, how many privately owned items are required? _____
8. Has the contractor, if involved, agreed to retain the privately owned equipment which is required to be used in conjunction with the government-owned items? _____
9. Is this package or line complete, including tooling, jigs, dies, fixtures, etc., in the numbers and amounts needed to produce the mobilization items? _____ YES _____ NO
10. What was the date of the last determination of need for the continued retention of the package or line? _____
11. Additional information: _____
12. Attached hereto is a list of the IPE in the package, or line identified by PEC/SCC code and departmental identification numbers.

I certify that the (package plant) (standby line) or (active base package) described above meets all criteria contained in Enclosure 4 to Department of Defense Instruction 4215.18, December 10, 1964.

DATE _____

ASSISTANT SECRETARY (ARMY), (NAVY), (AIR FORCE);
AGENCY DIRECTOR;

or

Remarks:

designee



DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY MATERIEL COMMAND
WASHINGTON, D.C. 20315

AMCPP-PI

16 August 1968

SUBJECT: Format A Requests to Establish ASOD Packages

SEE DISTRIBUTION

1. It has been determined by higher authority that additional information will be required to expedite the processing of Formats A.

2. An inclosure shall be furnished with each new Format A submission to provide the following data for each item planned to be produced by the proposed ASOD package:

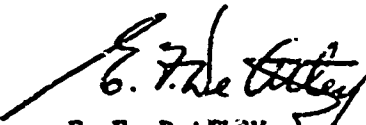
a. Mobilization requirements (breakdown by using Department (Army, Navy, Air Force) where applicable)

b. Identity of current and planned mobilization production sources, their respective maximum production capabilities and number of months required to reach maximum rate. Identify both private and government sources.

c. When it is proposed to retain the equipment on a contractor's site in lieu of a government-owned site, include a comparative analysis of costs and reactivation leadtimes.

3. A change will not be made to the new AR 700-34 (distribution now pending) until the DOD Instruction, which it implements, is revised. Until the change is made, the provisions of this letter will remain in effect.

FOR THE COMMANDER:


E. F. DeATLEY
Chief, Plans Division
Directorate of Procurement
and Production

DISTRIBUTION:
B-1 & PEQUA

10 July 1970

AR 700-80

EXHIBIT P-17 (Part I)

DATE_____

LAYAWAY AND/OR REDISTRIBUTION PROJECT,
RCS CSGLD-1126(R1)

1. Project No. _____ 2. PEMA _____ 3. Date effective _____
4. Title.
5. Total Cost _____ = Layaway _____ Rehab _____ + Other _____
(\$000)
6. Annual maintenance cost.
7. Facility/contractor.
8. Purpose.

*Figure S-10. Format for Exhibit P-17 (Part I).
(Detailed instructions follow.)*

10 July 1970

EXHIBIT P-17 (Part II)

Project No. _____

9. Item(s) produced.
10. Current and projected posture.
- a. End item(s) produced.
- b. Production capacity:
- | | MIN | 1-8-8 | 2-8-8 | MAX |
|----------------------------|-------|-------|-------|-------|
| (1) Active facilities | ----- | ----- | ----- | ----- |
| (2) Inactive facilities | ----- | ----- | ----- | ----- |
| (3) Present total capacity | ----- | ----- | ----- | ----- |
11. Description of facilities.
12. Scope of project.
13. Replacement value of facilities.
- a. Land and improvements ----- \$-----
- b. Buildings -----
- c. Severables -----
- (1) Industrial plant equipment (DIPEC reportable) -----
- (2) Other production equipment (Includes non-DIPEC reportable special tooling and special test equipment) -----
- (3) Nonproduction equipment -----
- d. Nonseverables ----- \$-----
- e. Total ----- \$-----
14. Detailed cost data.
- a. Layaway, relayaway, redistribution and/or disposal (estimated costs)
- (1) Processing for storage ----- \$-----
- (a) Number of items (DIPEC reportable) -----
- (b) Number of items of OPE -----
- (c) Number of items of non-production equipment -----
- (2) Removal from plant and preparation for shipment ----- \$-----
- (3) Transportation to storage -----
- (4) Receive and store at layaway location -----
- (5) Rehabilitation of equipment total ----- \$-----
- (a) Number of items -----
- (b) Replacement value ----- \$-----
- (6) Other expenses (specify) ----- \$-----
- TOTAL ----- \$-----

Figure 3-11. Format for Exhibit P-17 (Part II).
(Detailed instructions follow.)

10 July 1970

AR 700-90

- b. First year maintenance costs (OMA) ----- \$-----
- c. Subsequent annual maintenance costs (OMA) ----- \$-----
- 15. Requirements and production data.
- 16. Alternate courses of action.
- 17. Remarks.

Figure 3-11--Continued.

Appendix C
SAMPLE FORM—ECONOMIC ANALYSIS—
DOD INVESTMENTS, SUMMARY
OF PROJECT COSTS, FORMAT A

4 June 1969

**ECONOMIC ANALYSIS—DOD INVESTMENTS
SUMMARY OF PROJECT COSTS
FORMAT A**

1. Submitting DoD Component: _____
 2. Date of Submission: _____
 3. Project Title: _____
 4. Description of Project Objective: _____
 5. Alternative: _____ 6. Economic Life: _____

8. Project Costs						
7. Project Year	a. Nonrecurring		b. Recurring	c. Annual Costs	d. Discount Factor	e. Discounted Annual Cost
	R&D	Investment	Operations			
1.						
2.						
3.						
.						
.						
.						
25.						
9. TOTALS						

- 10a. Total Project Cost (discounted) _____
 10b. Uniform Annual Cost (without terminal value) _____
 11. Less Terminal Value (discounted) _____
 12a. Net Total Project Cost (discounted) _____
 12b. Uniform Annual Cost (with terminal value) _____
 13. Source/Derivation of Cost Estimates: (use as much space as required)
 a. Nonrecurring Costs:
 1) Research & Development:
 2) Investment:
 b. Recurring Cost:
 c. Net Terminal Value:
 d. Other Considerations:

14. Name and Title of Principal Action Officer	Date
--	------

Figure 3-1.

Appendix D

ECONOMIC ANALYSIS FOR RETENTION OF MOBILIZATION PRODUCTION CAPABILITY

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

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PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

INTRODUCTION

This appendix has been prepared to describe completely the contents of Phase I — Preliminary Evaluation of Alternatives, of the Economic Analysis for Retention of Mobilization Production Capability. The appendix has been designed to permit its removal from this report as a complete entity for reproduction and subsequent application by the Army at AMC major subordinate commands. Included are instructions for use of the Phase I evaluation, a list of alternatives to be evaluated and a set of the seven sections of questions that make up the evaluation procedures.

INSTRUCTIONS FOR USE OF PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Purpose

This preliminary evaluation method has been developed to aid major subordinate commands of the AMC in reviewing, justifying and selecting from among IPE retention alternatives resulting from the anticipated shutdown of an on-going production line. Its use is intended when retention of production capability under Army control should be considered to meet future mobilization production requirements.

The preliminary evaluation is the first step in developing an economic basis for justifying the choice of an alternative. Its purpose is to quickly eliminate infeasible alternatives from consideration and thereby reduce the scope and effort required for a more detailed economic analysis.

The preliminary evaluation should not be used to force a decision to avert the need for the more detailed Phase II economic analysis. Its use does permit consideration of the facts of the shutdown situation in

a standardized, logical sequence of questions. In so doing it also permits alternatives to drop out for good cause. In the event that Phase II of the economic analysis is finally found necessary, completion of the preliminary evaluation provides much basic information to aid the planner in performing the Phase II economic analysis.

Procedures

Phase I has been divided into seven sections to facilitate its use. No user will have to apply more than five since there are separate sections for GOGO, GOCO and COCO facilities. The user should begin with question 1.1 and continue through the sections only as far as necessary to eliminate all but one alternative. The preliminary evaluation may be stopped as soon as there is only one alternative remaining. Columns have been provided on the right side of each page in which the user can (✓) a YES or NO answer to a question and record the date on which it was answered. The dates will indicate any delays encountered in completing Phase I due to lack of information.

A list of possible alternatives has been provided to permit the user to cross out those that are eliminated during Phase I and know which remaining alternatives, if any, are to be examined by the Phase II economic analysis. Space has been provided for additional alternatives, if applicable. Space for applicable remarks or entry of data has been provided following many of the questions. An additional sheet has been attached at the end, Section 7, for cross referencing any further explanation or comments deemed necessary by the submitting command and certifying the completed work.

It is possible that the answers to some questions will require classification of some portions of Phase I. Proper classification of such information is the responsibility of the user.

Should Phase I be completed without reducing the alternatives to only one, the remaining alternatives are to be subjected to the full Phase II economic analysis procedure to aid in effecting a decision.

Distribution of Completed Phase I Evaluation

Four different situations are anticipated for distribution of completed Phase I preliminary evaluation to higher authority, if required. These situations are illustrated in Fig. D1.

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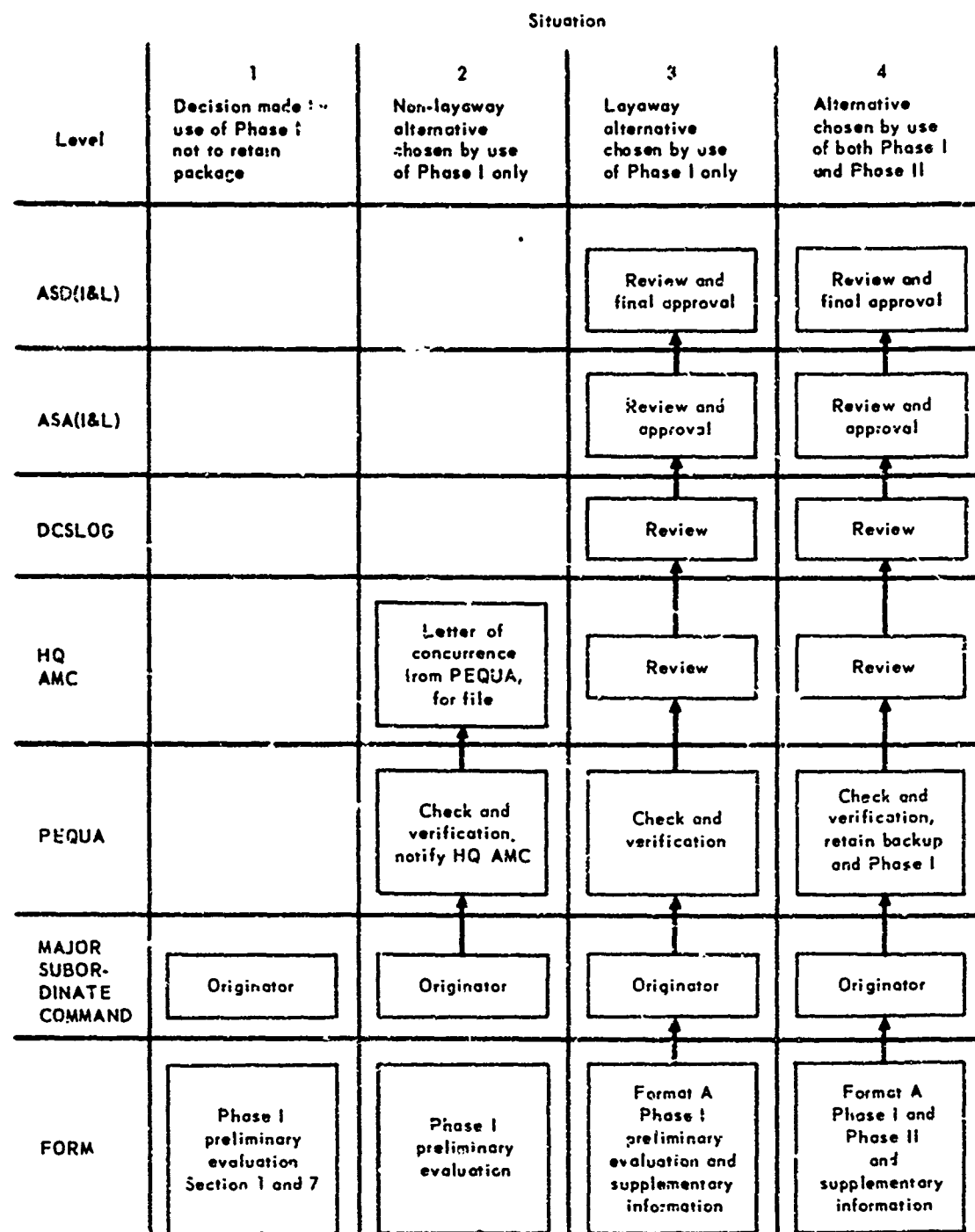


Fig. D1—Distribution and Approval of Economic Analysis and Layaway—Associated Forms

In the first situation a decision will have been made by use of Sections 1 and 7 of the Phase I preliminary evaluation not to retain the production package being shut down due to lack of mobilization or other requirements. In such a situation the originator would retain a copy of Sections 1 and 7 of Phase I for the record and proceed with excessing and disposal of the production capability in accordance with existing procedures and regulations. Approval of such a decision is not necessary above the major subordinate command level.

In the second situation an alternative not involving a layaway action will have been chosen by use of Phase I only, without need for the Phase II detailed economic analysis. In this situation the submitting command will forward two completed copies of Phase I to PEQUA for checking and verification of the contents. If PEQUA questions the contents of Phase I, differences will have to be resolved with the submitting command. When PEQUA completes its verification of Phase I, and the alternative chosen does not require a layaway action, it will send a letter to HQ AMC (AMC RP-OIP) indicating concurrence with the decision. HQ AMC will keep the letter on file for record and no further approvals at higher levels will be required. PEQUA will retain its copy of Phase I on file for five years or until the IPE package becomes active or is subject to disposal.

The third situation is similar to the second in that an alternative will have been chosen by use of Phase I only. The difference lies in that the alternative chosen will involve a layaway action that requires higher level approval. Therefore, for this situation the submitting command will forward six copies of Phase I along with the Format A layaway authorization request and any supplementary information to PEQUA for checking and verification of the contents. Again, upon satisfaction of any PEQUA comments five copies of the completed Phase I will be sent with the Format A and supplementary information to HQ AMC (AMC RP-OIP) for review. From AMC onward both documents will follow existing procedures for review and approval of Format A submissions at DCSLOG and the Assistant Secretary levels.

In the fourth situation use of Phase I will not have been sufficient to select an alternative and the full Phase II economic analysis will have been completed. In this situation the submitting command will

forward two copies of the completed Phase I and all the Phase II economic analysis forms, along with the Format A layaway authorization request and supplementary information to PEQUA for checking and verification of the contents. Again, upon satisfaction of any PEQUA comments, PEQUA will retain the completed Phase I and all the Phase II summary cost analysis forms and backup sheets. Only four copies of the alternatives comparison sheet, which is the final result of the Phase II economic analysis, will be forwarded to HQ AMC (AMC RP-OIP) and on through the review and approval lines of authority with the Format A layaway request.

In the very unlikely event that an economic analysis will include an alternative other than layaway and such an alternative is eventually selected, HQ AMC (AMC RP-OIP) should receive the complete Phase I and Phase II economic analysis forms after check and verification by PEQUA and no further reviews or approvals will be needed.

ALTERNATIVES TO BE CONSIDERED IN PHASES I AND II

The following alternatives should be considered in performing both Phases I and II of the economic analysis:

1. Disposal of IPE through existing DIPEC channels
2. Sale of IPE to current contractor
3. Lease of IPE to current contractor
4. Rent free/maintenance exchange with current contractor
5. Sale of IPE to another producer
6. Lease of IPE to another producer
7. Rent free/maintenance exchange with another producer
8. Active base layaway
9. Standby layaway
10. Package plant layaway
11. Some combination of two or more types of layaway
12. Government leasing of contractor-owned equipment
13. Any additional alternative devised by submitting command.

The alternatives are listed in order of preference to conform to Department of Defense policy in limiting government ownership of production facilities and reducing the cost of facilities owned to a minimum, consistent with meeting mobilization requirements. Alternatives should be

crossed off the list as they are eliminated during the Phase I analysis. Any alternatives remaining at the conclusion of Phase I should be subjected to the Phase II analysis unless only one alternative has survived. If only one alternative is left after Phase I it is unnecessary to perform Phase II.

ECONOMIC ANALYSIS FOR RETENTION OF MOBILIZATION PRODUCTION CAPABILITY

PHASE I -- PRELIMINARY EVALUATION OF ALTERNATIVES

Section 1 -- Determination of Need for Production Capability

a. Submitting Army component _____ b. Date _____

c. Items to be produced (Incl. critical components) _____

d. Name and location of current producer(s) _____

e. Contract status _____ current producer(s) _____

f. State reasons for contract termination or curtailment that require
this economic analysis to be made. _____

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question number	Section 1	Y E S	N O	Date
1.1	<p>Has Item Analysis, AMC Form(s) 1446, been updated (revised) and completely filled out for the end item(s) and critical components the package is capable of producing, including:</p> <p>a. date and sources of user requirements, to be stated in Section V (remarks) of AMC Form 1446. If more than 12 months old, go back and recompute with MIDA's assistance.</p> <p>b. type of base used (active base package, standby line, package plant, hot, cold, warm, or some combination) in computing mobilization production requirements in Section IV, and date of calculation, stated in Section V of AMC Form 1446.</p> <p>-- If yes, enter schedule and revision numbers and date under remarks below. Go to next question.</p> <p>-- If no, obtain required data and complete form(s), go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>Sched. No. _____ Rev. No. _____ Date _____</p>			
1.2	<p>Has Facilities Analysis, AMC Form(s) 1447, been updated (revised), and completely filled out for the end item(s) and critical components the package is capable of producing?</p> <p>-- If yes, go to next question.</p> <p>-- If no, obtain required data and complete form(s), go to next question.</p>			
1.3	<p>Are any problems anticipated in renewing the DD Form 1519 with planned producers?</p> <p>-- If no, go to next question.</p> <p>-- If yes, explain in remarks below, possible impact on calculation of mobilization production requirements</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question number	Section 1	Y E S	N O	Date
1.3 (continued)	<p>in 1.1 above. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
1.4	<p>Has a survey of alternate production sources for the item(s) or critical components been made within the last 12 months to determine if the IPE in this package must be retained? (Survey should satisfy criterion B in App 6 of AR 700-43).</p> <p>-- If yes, state date and person responsible on AMC Form 1446, Section V. Go to next question.</p> <p>-- If no, perform survey, enter date as above and go to next question.</p>			
1.5	<p>Do mobilization requirements appear on AMC Form 1446 for any of the end item(s) this package is planned to produce?</p> <p>-- If yes, eliminate disposal of IPE as an alternative and go to next question in Section 2 of this Phase I evaluation.</p> <p>-- If no, determine from DCSLOG and/or commodity manager if package may have to be retained or reactivated at a later date for repair parts production or any other reason.</p> <p>a. If yes, enter reason and source of information under remarks below. Go to next question in Section 2 of this Phase I evaluation.</p> <p>b. If still no, arrange to excess IPE and stop analysis here.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 2 - General Elimination of Alternatives	Y E S	N O	Date
2.1	<p>Do any alternatives fail to satisfy mobilization requirements, as stated on AMC Form 1446, with regard to both quantity and production schedule?</p> <p>-- If no, go to next question.</p> <p>-- If yes, eliminate such alternatives and enter reason in remarks below. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
2.2	<p>How many years will the end item(s) this package is planned to produce continue to be preferred items, type classified as STD-A for procurement purposes?</p> <p>-- Obtain for each end item from commodity specialist & major subordinate command or HQ AMC and enter in remarks below. Use largest number of years as time period for comparison purposes in Phase II economic analysis.</p> <p>-- Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>End item _____ Remaining time as preferred item ____ yrs</p> <p>End item _____ Remaining time as preferred item ____ yrs</p>			
2.3	<p>If time item(s) will continue as preferred item(s) type classified STD-A) for procurement purposes is less than (two) years, determine if current assets of these items or substitutes would satisfy peacetime requirements for that time period.</p> <p>-- If no, go to question 2.4</p> <p>-- If yes, retention of package cannot be justified based on requirements for such items. Note this finding under remarks below. Justification must be based on requirements beyond that which can be satisfied by current assets. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 2 (cont'd)	Y E S	N O	Date
2.4	<p>Will any of the IPE presently in the package be used on another end item(s) when the present item(s) ceases to be the preferred item(s)?</p> <p>-- If yes, use the acquisition costs and longest expected time as preferred item for the future item(s) in making the economic analysis. Note this information in remarks below for use in Phase II and go to next question.</p> <p>-- If no, current assets will support peacetime requirements until item is no longer to be procured and IPE will not be needed for a replacement item, therefore excess the IPE in the package, stop analysis here.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>End item: _____ Preferred item time _____ years</p> <p>Replacing end item: _____</p> <p>End item: _____ Preferred item time _____ years</p> <p>Replacing end item: _____</p>			
2.5	<p>Looking again at AMC Form 1446 -- do early peak mobilization requirements or specified leadtimes call for a high state of readiness (as defined in AR 700-90) in the package?</p> <p>-- If no, go to next question.</p> <p>-- If yes, enter peak requirements and/or leadtimes in remarks below and</p> <p>a. eliminate any alternatives that would not satisfy this need.</p> <p>b. if all the alternatives would be eliminated consider adding IPE to this package or modernization, to provide capability to meet peak requirement, or reduce leadtime, or</p> <p>c. note under remarks below that no alternative will fully satisfy the requirement and go to next question to select next best alternative.</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 2 (cont'd)	Y E S	N O	Date
2.5 (cont'd)	<p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>End item _____ Prod. leadtime reqd. _____ months</p> <p>Alternative(s) eliminated _____ Reason _____</p>			
2.6	<p>Are there reasons why the government-owned IPE cannot be pre-served and stored?</p> <p>-- If no, go to next question.</p> <p>-- If yes, note in remarks below what these reasons are and eliminate all layaway alternatives. Remaining alternatives will consider only active use of the equipment at some facility via sale or lease to a contractor. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>Reasons for precluding preservation and storage of IPE are:</p> <p>_____</p> <p>_____</p> <p>_____</p>			
2.7	<p>Does the equipment require operational cycling (operation under no-load conditions during storage)?</p> <p>-- If no, go to next question.</p> <p>-- If yes,</p> <p>a. indicate in remarks below the reason for this requirement</p> <p>b. eliminate any alternative that will not provide this capability or,</p> <p>c. create a new alternative combining two or more types of layaway. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>Equipment requiring operational cycling and reason: _____</p> <p>_____</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 2 (cont'd)	Y E S	N O	Date
2.8	<p>Is the production capability (process) so integrated or specially adapted to the present production site so that relocation of the line or a portion of the line would render future reactivation infeasible?</p> <p>-- If no, go to next question.</p> <p>-- If yes, eliminate package plant layaway and any other alternative that would require relocation of the equipment such as use by a contractor other than at the present site and note in remarks below. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
2.9	<p>Is any of the equipment of a peculiar configuration, or the component parts of the equipment of an unusual composition which might impact on any alternatives?</p> <p>-- If no, go to next question.</p> <p>-- If yes, note the peculiarity under remarks below along with any alternative that would have to be eliminated. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
2.10	<p>Is any of the government-owned IPE contaminated and unable to be cleaned for use on other items or in other locations?</p> <p>-- If no, go to next question.</p> <p>-- If yes, eliminate alternatives requiring future use of the equipment for new items or in other than the present location. Note reasons and alternatives eliminated in remarks below. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
2.11	<p>Is retention of currently existing technical expertise an important consideration?</p> <p>-- If no, go to next question.</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 2 (cont'd)	Y E S	N O	Date
2.11 (cont'd)	<p>-- If yes, state reason in remarks below and eliminate package plant layaway and use by other than the current contractor as alternatives. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
2.12	<p>Does the equipment require dehumidified storage?</p> <p>-- If no, go to next question.</p> <p>-- If yes, eliminate any alternative not capable of satisfying this storage condition and note under remarks below. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
2.13	<p>Will the climate or geographical location have an impact on any alternative?</p> <p>-- If no, go to next question.</p> <p>-- If yes, note impact in remarks below along with alternatives that would have to be eliminated. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
2.14	<p>Is the facility containing the government-owned IFE a GOGO, GOCO, or COCO plant?</p> <p>-- If GOGO, go to next question in Section 3</p> <p>-- If GOCO, go to next question in Section 4</p> <p>-- If COCO, go to next question in Section 5.</p>			

PHASE I -- PRELIMINARY EVALUATION OF ALTERNATIVES

Section 3 - Elimination of Alternatives for GOGO Facilities

Question Number	Y E S	N O	Date
3.1 Is there a possibility that all or part of the government-owned IPE may be sold or leased to a contractor?			
-- If no, eliminate the three alternatives involving contractor use of the equipment. Go to next question.			
-- If yes, and:			
a. facility will become GOCO, go to Section 4 of this checklist, or if			
b. facility will become COCO, go to Section 5 of this checklist.			
Note: If only part of the IPE will be sold or leased then the IPE that is to remain in the GOGO facility should be analyzed as a separate layaway package from the IPE that will be removed from the facility, assuming the equipment will be used for different purposes.			
3.2 Will there be sufficient production floor or storage space available in the facility where the IPE is presently operating to retain it there:			
-- If yes, eliminate package plant layaway alternative. If only one alternative remains stop analysis here. If not, go to Section 6 of this Phase I Preliminary Evaluation.			
-- If no, eliminate active base and standby alternatives. Package plant will be the sole remaining acceptable alternative.			

PHASE I -- PRELIMINARY EVALUATION OF ALTERNATIVES

Section 4 - Elimination of Alternatives for GOCO Facilities Question Number

Y E S	N O	Date
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4.1 Is the production process in which the government-owned IPE is used proprietary to the current contractor?

-- If no, go to next question.

-- If yes,

a. use of equipment by other producers and package plant layaway may have to be eliminated as alternatives unless the contractor would agree to licensing arrangements for the process.

b. the submitting command should make every effort to reach a satisfactory agreement with the current contractor so the equipment may remain on site. Note important considerations under remarks below. Go to next question.

Remarks: _____

4.2 Is adequate time available to negotiate alternative sale or lease actions with the current contractor or other possible planned producers?

-- If yes, go to next question.

-- If no, list under remarks below those alternatives that must be eliminated and the reason. Go to next question or, if all sale or lease alternatives are eliminated, go to Section 6 of Phase I Preliminary Evaluation.

Remarks: _____

Alternative eliminated _____ Reason _____

Alternative eliminated _____ Reason _____

4.3 Is the current contractor interested in purchasing the government-owned IPE in the package?

-- If no, go to next question.

-- If yes,

a. will the contractor agree to the national security clause?

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 4 (cont'd)	Y E S	N O	Date
4.3 (cont'd)	<p>b. does the command consider the contractor's purchase offer acceptable?</p> <p>c. does the command believe this sale would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations?</p> <p>-- If all yes, stop analysis here.</p> <p>-- If not, go to next question.</p>			
4.4	<p>Is the current contractor interested in leasing the government-owned IPE in the package?</p> <p>-- If no, go to next question.</p> <p>-- If yes,</p> <p>a. will the contractor agree to the national security clause?</p> <p>b. does the command consider the rental offer acceptable?</p> <p>c. does the command believe this lease would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations?</p> <p>-- If all yes, stop analysis here.</p> <p>-- If not, go to next question.</p>			
4.5	<p>Is the current contractor interested in rent-free use of the government-owned IPE in exchange for continued maintenance of the equipment at no charge to the government, in accordance with the National Leasing Act of 1954?</p> <p>-- If no, go to next question.</p> <p>-- If yes, and the command believes this exchange would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations, stop analysis here. If not, go to next question.</p>			
4.6	<p>Are any other producers interested in purchasing the government-owned IPE in the package?</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 4 (cont'd)	Y E S	N O	Date
4.6 (cont'd)	<p>-- If no, go to next question</p> <p>-- If yes,</p> <p>a. will the producer agree to the national security clause?</p> <p>b. does the command consider the producer's purchase offer acceptable?</p> <p>c. does the command believe this sale would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations?</p> <p>-- If yes, stop analysis here.</p> <p>-- If not, go to next question.</p>			
4.7	<p>Are any other producers interested in leasing the government-owned IPE in the package?</p> <p>-- If no, go to next question.</p> <p>-- If yes,</p> <p>a. will the producer agree to the national security clause?</p> <p>b. does the command consider the rental offer acceptable?</p> <p>c. does the command believe this lease would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations?</p> <p>-- If all yes, stop analysis here.</p> <p>-- If not, go to next question.</p>			
4.8	<p>Are any other producers interested in rent-free use of the government-owned IPE in exchange for continued maintenance of the equipment at no charge to the government, in accordance with the National Leasing Act of 1947?</p> <p>-- If no, any type of contractor use of the IPE is eliminated as an alternative for the Phase I Preliminary Evaluation. Consider in the Phase II Economic Analysis only those lay-away alternatives that have not previously been eliminated. If only one alternative remains stop analysis here. If</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 4 (cont'd)	Y E S	N O	Date
4.8 (cont'd)	<p>not, go to Section 6 of this Phase I Preliminary Evaluation.</p> <p>-- If yes, and the command believes this exchange would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations, stop analysis here.</p>			

PHASE I -- PRELIMINARY EVALUATION OF ALTERNATIVES
Section 5 - Elimination of Alternatives for COCO Facilities

Question Number	Y E S	N O	Date
<p>5.1 Is the production process in which the government-owned IPE is used proprietary to the current contractor?</p> <p>-- If no, go to next question.</p> <p>-- If yes,</p> <p style="margin-left: 40px;">a. use of equipment by other producers and package plant layaway may have to be eliminated as alternatives unless the contractor would agree to licensing arrangements for the process.</p> <p style="margin-left: 40px;">b. the submitting command should make every effort to reach a satisfactory agreement with the current contractor so the equipment may remain on site. Note important considerations under remarks below. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
<p>5.2 Is adequate time available to negotiate alternative sale or lease actions with the current contractor or other possible planned producers?</p> <p>-- If yes, go to next question.</p> <p>-- If no, list under remarks below those alternatives that must be eliminated and the reason. Go to next question --, if all sale or lease alternatives are eliminated, go to Section 6 of this Phase I Preliminary Evaluation.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>Alternative eliminated _____ Reason _____</p> <p>Alternative eliminated _____ Reason _____</p>			
<p>5.3 Is the current contractor interested in purchasing the government-owned IPE in the package?</p> <p>-- If no, go to next question.</p> <p>-- If yes,</p> <p style="margin-left: 40px;">a. will the contractor agree to the national security clause?</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 5 (cont'd)	Y E S	N O	Date
5.3 (cont'd)	<p>b. does the command consider the contractor's purchase offer acceptable?</p> <p>c. Does the command believe this sale would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations?</p> <p>-- If all yes, stop analysis here.</p> <p>-- If not, go to next question.</p>			
5.4	<p>Is the current contractor interested in leasing the government-owned IPE in the package?</p> <p>-- If no, go to next question.</p> <p>-- If yes,</p> <p>a. will the contractor agree to the national security clause?</p> <p>b. does the command consider the rental offer acceptable?</p> <p>c. does the command believe this lease would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations?</p> <p>-- If all yes, stop analysis here.</p> <p>-- If not, go to next question.</p>			
5.5	<p>Is the current contractor interested in rent-free use of the government-owned IPE in exchange for continued maintenance of the equipment at no charge to the government, in accordance with the National Housing Act of 1947?</p> <p>-- If no, go to next question.</p> <p>-- If yes, and the command believes this exchange would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations, stop analysis here. If not, go to next question.</p>			

PHASE I -- PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 5 (cont'd)	Y E S	N O	Date
5.6	Are any other producers interested in purchasing the government-owned IPE in the package? -- If no, go to next question. -- If yes, a. will the producer agree to the national security clause? b. does the command consider the producer's purchase offer acceptable? c. does the command believe th's sale would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations? -- If yes, stop analysis here. -- If not, go to next question.			
5.7	Are any other producers interested in leasing the government-owned IPE in the package? -- If no, go to next question. -- If yes, a. will the producer agree to the national security clause? b. does the command consider the rental offer acceptable? c. does the command believe this lease would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations? -- If all yes, stop analysis here. -- If not, go to next question.			
5.8	Are any other producers interested in rent-free use of the government-owned IPE in exchange for continued maintenance of the equipment at no charge to the government, in accordance with the National Leasing Act of 1947? -- If no, any type of contractor use of the IPE is eliminated as an alternative for the Phase I Preliminary Evaluation. Go to next question. -- If yes, and the command believes this exchange would be a satisfactory alternative based on reactivation leadtime requirements, the possibility of sabotage and other considerations, stop analysis here.			

PHASE I -- PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 5 (cont'd)	Y E S	N O	Date
5.9	<p>Will the current contractor permit layaway at his plant site?</p> <p>-- If no,</p> <p>a. what are the contract terms for plant clearance of IPE? Enter under remarks below.</p> <p>b. eliminate active base and standby layaway alternatives and consider package plant layaway as one of the acceptable alternatives for the economic analysis. Go to next question.</p> <p>-- If yes, consider all types and combinations of layaway not previously eliminated as acceptable alternatives for the Phase II economic analysis. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
5.10	<p>Is government leasing of the contractor-owned equipment a possible alternative?</p> <p>-- If no, and only one alternative remains stop analysis here. If not, go to Section 6 of this Phase I Preliminary Evaluation.</p> <p>-- If yes, the costs of this alternative must be considered in the Phase II Economic Analysis. Enter any additional or explanatory remarks pertinent to this preliminary evaluation in Section 7.</p> <p>Go to Section 6 of this Phase I Preliminary Evaluation.</p>			

PHASE I - PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 6 - Basic Information	Y E S	N O	Date
6.1	<p>Is the current asset position for the end item(s) and critical components known?</p> <p>-- If yes, enter below, go to next question.</p> <p>-- If no, obtain this information, enter below and go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>End item _____ Asset position as of _____ (date) _____ (qty)</p> <p>Critical component _____ Asset position as of _____ (date) _____ (qty)</p>			
6.2	<p>Is the peacetime consumption rate for the end item(s) known?</p> <p>-- If yes, enter in remarks below, go to next question.</p> <p>-- If no, obtain from the AMP, enter below and go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>End item _____ Peacetime consumption rate _____</p>			
6.3	<p>Are there any type classified STD-B item(s) in the inventory to be used up as a substitute for the planned preferred item(s)?</p> <p>-- If no, go to next question.</p> <p>-- If yes,</p> <p>a. Identify substitute items and quantities available in remarks below.</p> <p>b. Are the quantities of substitutes large enough to affect D-P stock or mobilization production requirements?</p> <p>-- If no, go to next question.</p> <p>-- If yes, consider this situation in Phase II when computing current asset position and D-P stock costs on Backup Sheet for D-P Stock Costs and in determining the required capability of this proposed layaway package. Go to next question.</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 6 (cont'd)	Y E S	N O	Date
6.3 (cont'd)	Remarks: _____ _____ _____			
6.4	Will the production capacity of the IPE package exceed the mobilization requirements (with regard to quantity and production schedule) for <u>all</u> the end items it is planned to produce? -- If no, go to next question. -- If yes, determine which IPE would have to be excessed and do not include this IPE in computing layaway costs in Phase II for economic comparison purposes. (Also note that D-P stock will not be required and there will be no D-P stock acquisition cost needed in the Phase II economic analysis unless there is a minimum required reserve stock.) Go to next question.			
6.5	Considering the present or proposed capabilities of planned producers, should the production capability of this package be increased by addition of more IPE or modernization to reduce need for acquiring D-P stock? -- If no, go to next question. -- If yes, a. Is there room for additional IPE in contractor's plant? -- If no, consider modernization only, go to (b) -- If yes, consider both additional IPE and modernization, go to (b). b. Compute separately from this analysis, savings in D-P stock that would result from increased IPE or modernization and submit to HQ AMC for consideration only if a layaway alternative is chosen. Go to next question.			
6.6	Have reutilization value percentages (RVP) for all government-owned IPE in the current contractor's plant been obtained from DIPEC for the package to be analyzed?			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 6 (cont'd)	Y E S	N O	Date
6.6 (cont'd)	<p>-- If yes, go to next question.</p> <p>-- If no, obtain this information from DIPEC.</p> <p>Go to next question.</p>			
6.7	<p>Does any of the government-owned IPE have a reutilization value percentage less than 30%?</p> <p>-- If no, go to next question.</p> <p>-- If yes, the submitting command should consider the following actions in the order shown, consistent with the requirements of AR 700-90, AR 700-43, and ASPR, prior to physically initiating layaway, but separate from this analysis:</p> <p>a. Scan DIPEC files for replacements of IPE with an RVP less than 30%.</p> <p>b. Request funds for repair of IPE or for rebuild, if cost does not exceed allowable limit.</p> <p>c. Submit by existing procedures a project for replacement of IPE or modernization, if shown to be economically worthwhile. Go to next question.</p>			
6.8	<p>Is there any need for further geographical dispersion of planned producers that will affect layaway of this package.</p> <p>-- If no, go to next question.</p> <p>-- If yes, note the limitation in remarks below, go to next question.</p> <p>Remarks: _____</p> <p>_____</p>			
6.9	<p>Is the end item(s) or critical component(s) physically practical to store and maintain as a mobilization reserve item, considering deterioration and obsolescence rates and/or special storage requirements?</p> <p>-- If yes, go to next question.</p> <p>-- If no,</p> <p>a. Note that no D-P stock acquisition cost for such items is to be allowed in Phase II Economic Analysis.</p> <p>b. Requirements must be fully satisfied by production facilities. Reconsider question 6.5 and go to next question.</p>			

PHASE I - PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 6 (cont'd)	Y E S	N O	Date
6.10	<p>Are any design changes expected to occur in the end item(s) during the time they will continue as preferred items that would require different types of IPE or tooling changes in the package to produce the item(s)?</p> <p>-- If no, go to next question.</p> <p>-- If yes,</p> <ol style="list-style-type: none"> briefly state nature of design change and its probable effect on the IPE under remarks below, and consider excessing some of the IPE if that course of action is indicated, or setting a review date for the package, if approved for layaway, to assess the effects of design changes on the package when they are expected to occur. <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
6.11	<p>Do budgetary restrictions exist in PEMA Policy and Guidance or other policy documents that would limit procurement of full D-P stock for any end item(s)?</p> <p>-- If no, go to next question.</p> <p>-- If yes, note under remarks below for use later in economic analysis. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p> <p>End item _____ D-P stock limit _____ months</p> <p>Source _____</p> <p>End item _____ D-P stock limit _____ months</p> <p>Source _____</p>			
6.12	<p>Will provision have to be made for acquiring and storing special tooling and test equipment, drawings and manufacturing instructions that are a necessary part of the production package?</p>			

PHASE I — PRELIMINARY EVALUATION OF ALTERNATIVES

Question Number	Section 6 (cont'd)	Y E S	N O	Date
6.12 (cont'd)	<p>-- If no go to next question.</p> <p>-- If yes, note under remarks below for later use in computing layaway costs, go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
6.13	<p>Is production leadtime controlled by:</p> <p>a. an end item? or</p> <p>b. a pacing component? Identify item or component under remarks below and go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
6.14	<p>Would the equipment be in danger of violating State or Federal anti-pollution laws if reactivated in the future?</p> <p>-- If no, go to next question.</p> <p>-- If yes, consider possible replacement or modernization of offending equipment prior to layaway and submit proposals for same if a layaway alternative is chosen. Note important considerations under remarks below. Go to next question.</p> <p>Remarks: _____</p> <p>_____</p> <p>_____</p>			
6.15	<p>Is the acquisition value of government-owned IPE in the package greater than \$50,000?</p> <p>-- If yes, sign certification at bottom of Section 7 and go to Phase II of Economic Analysis.</p> <p>-- If no, Phase II Economic Analysis is not required. Decision to retain production capability may be made based on results of this checklist and judgment of submitting command. Sign certification at bottom of Section 7 to complete the analysis.</p>			

PHASE I -- PRELIMINARY EVALUATION OF ALTERNATIVES

Section 7 - Additional Remarks and Certification

(Use to record rationale or justification for answers given or comments for which there was insufficient space earlier in this evaluation. Cross reference to question number. Use additional sheets if necessary.)

CERTIFICATION

I certify that this preliminary evaluation has been completed to the best of my ability, based on information available at this time.

Name and title of principal action officer: _____

(date)

APPROVAL

Reviewed and approved by the US Army Production Equipment Agency.

Name and title of action officer: _____

(date)

Appendix E

ECONOMIC ANALYSIS FOR RETENTION OF MOBILIZATION PRODUCTION CAPABILITY PHASE II--ECONOMIC ANALYSIS OF ALTERNATIVES

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INTRODUCTION

Phase II of the economic analysis for retention of mobilization production capability is to be accomplished when two or more feasible retention alternatives remain feasible after application of the Phase I preliminary evaluation. Phase II consists of a detailed cost/benefit analysis designed specifically for the retention situation but similar in format to the type of economic analysis required by AMCR 11-34. The cost aspects of the situation are emphasized because no alternative is considered feasible unless it first meets the mobilization production requirements with regard to both quantity and schedule. Benefits of all feasible alternatives will therefore be approximately equal and only differentials between alternatives need be recorded.

This appendix contains sample formats and guidance for preparation of all the prescribed parts of the Phase II analysis. The inclusion of certain required information may dictate that some portions of the analysis be classified. It is the responsibility of the user to properly classify the contents of the Phase II analysis.

Phase II

ECONOMIC ANALYSIS - ALTERNATIVES COMPARISON SHEET

1. Submitting Army Component _____ 2. Date _____
3. Items to be Produced _____
(incl. critical components) _____
4. Name and Location of Current Producers(s) _____

5. Project Year	Cost Factors	6. Alternative Costs				
		1	2	3	4	5
		Discounted Annual Cost	Discounted Annual Cost	Discounted Annual Cost	Discounted Annual Cost	Discounted Annual Cost
1	D-P Stock Acq Layaway Holding Other _____					
2	D-P Stock Acq Layaway Holding Other _____					
3	D-P Stock Acq Holding Other _____					
.						
.						
.						
N	D-P Stock Acq Holding Reactivation Other _____					
7. TOTALS		\$				

8. Remarks and Non-\$ Quantifiable Benefits: _____

9. Name and Title of Principal Action Officer: _____

Phase II

ECONOMIC ANALYSIS - SUMMARY OF COSTS

1. Submitting Army Component _____ 2. Date _____
3. Items to be Produced _____
(incl. critical components) _____
4. Name and Location of Current Producer(s) _____

5. Alternative _____

6. Project Year	Cost Factors	7. Annual Costs		
		Annual Cost a.	Discount Factor b.	Discounted Annual Cost c.
1	D-P Stock Acq.		.954	
	Layaway			
	Holding		.954	
	Other _____			
2	D-P Stock Acq.		.867	
	Layaway			
	Holding		.867	
	Other _____			
3	D-P Stock Acq.		.788	
	Holding		.788	
	Other _____			
.				
.				
.				
N	D-P Stock Acq.			
	Holding			
	Reactivation			
	Other _____			
8. TOTALS	\$			

9. Remarks and Non-\$ Quantifiable Benefits: _____

10. Name and Title of Principal Action Officer: _____

Phase II

BACKUP FOR ECONOMIC ANALYSIS
D-P STOCK ACQUISITION COSTS

1. Submitting Army Component _____ 2. Date _____
3. Item to be Produced _____
4. Item _____ of _____ items to be produced as part of this analysis
no. no.
5. D-P Stock Limitation _____ months
6. Total Mobilization Requirements _____
7. Less: Assets as of _____ date _____
(including substitute items) _____
* _____
8. Mobilization Production Requirements _____
9. Less Capacity of Planned Producers - Hot _____
Warm _____
Cold _____
10. D-P Day Stock Required _____
11. D-P Day Stock Permitted to be Acquired _____
12. D-P Stock Acquisition Cost = Item 11 x Unit Cost/Item _____
- Total \$ _____
13. Annual D-P Stock Acq. Cost = Total/No. Years for Analysis \$ _____
14. Sources for Above Information
 - (6) Total Mob. Reqmts. _____
 - (7) Current Assets _____
Peacetime Cons. Rate _____
 - (9) Capacity of Producers _____
 - (12) Unit Cost/Item _____

*Assets = Current Assets - (Peacetime Consumption Rate x Applicable Time)

Phase II
BACKUP FOR ECONOMIC ANALYSIS
LAYAWAY COSTS

1. Submitting Army Component _____ 2. Date _____
3. Items to be Produced _____
(incl. critical components) _____
4. Name and Location of Current Producer(s) _____

5. Location of Facilities to be Laid Away (if known) _____
6. Project Year ____ of ____ (use separate backup sheets for each year)

Cost Elements	7. Annual alternative costs			
	Active Base	Standby	Package Plant	Combination
8. Layaway, relayaway, redistribution and/or disposal (estimated costs)				
(a) Processing for storage				
(1) No. of items (DIPEC reportable) _____				
(2) No. of items of OPE _____				
(3) No. of items of non-production equipment _____				
(b) Removal from plant and preparation for shipment				
(c) Transportation to storage				
(d) Receive and store at layaway location				
(e) Rehabilitation of equipment total				
(1) No. of items _____				
(2) Replacement value of items to be rehabilitated \$ _____				
(3) Replacement value of all IPE in package _____				
(f) Other expenses (specify)				
(1) Restoration of facilities				
9. TOTALS	\$			

Phase II

BACKUP FOR ECONOMIC ANALYSIS HOLDING COSTS

1. Submitting Army Component _____ 2. Date _____
3. Items to be Produced _____
(incl. critical components) _____
4. Item(s) to be Stored - End item(s) and/or components ☐ IPE ☐
(use separate sheets for end items and IPE)
5. Storage Location _____
6. Unit cost of end item(s) _____
7. Holding cost percent (if applicable) _____
8. Total square feet of IPE and Other Equipment to be Stored _____

9. Project Year	Cost Elements	10. Annual Cost
1	Storage Maintenance Deterioration Obsolescence Losses	
	Total	
2	Storage Maintenance Deterioration Obsolescence Losses	
	Total	
3 . . .	Storage Maintenance Deterioration Obsolescence Losses	
	Total	
. . N	Storage Maintenance Deterioration Obsolescence Losses	
11. Total		\$

Phase II
BACKUP FOR ECONOMIC ANALYSIS
REACTIVATION COSTS

1. Submitting Army Component _____ 2. Date _____
3. Items to be Produced _____
(incl. critical components) _____
4. Producer Facilities and Location of Layaway (if known) _____
5. Project Year _____
6. Discount Factor _____ (choose from App. F)

Cost Elements	7. Alternative Costs			
	Active Base	Standby	Package Plant	Combination
Personnel Costs Wages Training expenses Other (specify) _____				
Operating Costs Transportation from storage to use Materials for cleanup, test, etc. Utilities installation or hookup Rehabilitation previously unexpected Other services (specify) _____				
8. TOTALS	\$			

INSTRUCTIONS FOR PREPARATION OF PHASE II ECONOMIC ANALYSIS FORMS

Alternatives Comparison Sheet (Numbers are keyed to item numbers of the Format)

1. Submitting Army Component: The major subordinate command of AMC responsible for the analysis.
2. Date: Enter the date this sheet was prepared.
3. Items to be Produced: The FSN and nomenclature of all end items and critical components thereof for which the production capability is to be retained.
4. Name and Location of Current Producer(s). Name and address of all producers currently producing Item 3.
5. Project Years: Identifies the years in which a cost will be incurred. Enter year from Summary of Cost Sheet, Item 6.
6. Alternative Costs:
 - a. Enter at the top of each column in place of the numbers the name of the alternatives being examined. For example, in place of No. 1 write Active Base Package, in place of No. 2, Standby Line.
 - b. Under each of the alternatives being analyzed enter the discounted annual cost for each applicable cost factor for each year of the total time period. These figures are to be taken from the last column of Item 7 on the Summary of Costs for each alternative.
7. Totals: Sum the discounted annual costs listed for each alternative and enter the sum at the bottom of each column. Each columnar total should correspond to the total in Item 8 of a Summary Cost Sheet.

8. Remarks and Non-\$ Quantifiable Benefits: Briefly summarize the information recorded under Item 9 on the Summary of Costs for each alternative.
9. Name and Title of Principal Action Officer: Identify the name(s) of the principal parties responsible for the economic analysis.

Summary of Costs (Numbers are keyed to item number of the Format)

1. Submitting Army Component: The major subordinate command of AMC responsible for the analysis.
2. Date: Enter the date this sheet was prepared.
3. Items to be produced: The FSN and nomenclature of all end items and critical components thereof for which the production capability is to be retained.
4. Name and Location of Current Producer(s). Name and address of all producers currently producing Item 3.
5. Alternative: Enter the name of the alternative for which costs are being summarized, for example, Active Base Package.
6. Project Years: Identifies the years in which a cost will be incurred. The total number of years (N) will be the longest time period during which an end item to be produced could be expected to remain in the Army supply system as a preferred item, i.e. type classified Standard A. Enter the last year based on the answers to Phase I preliminary evaluation question number 2.3 or 2.4.
7. Annual Costs:
 - a. Enter in the first column, headed Annual Cost, the annual cost figures

- obtained from the Backup Sheet for each cost factor that is applicable to the alternative being analyzed, for each year of the total time period. Cost factors other than those listed should be included if applicable in the judgment of the submitting command. Likewise, inapplicable cost factors may be omitted.
- b. Enter in the second column, headed Discount Factor, the appropriate project year discount factor selected from Appendix Table F, if not already provided. Stock acquisition and holding costs are assumed to be mid-year costs as an average of annual expenditures. Layaway costs may be mid-year or year-end, depending on the expected time to complete the layaway action. Reactivation is a year-end cost at the end of the last year of the time period.
 - c. Enter in the third column, headed Discounted Annual Cost, the product of the Annual Cost and the Discount Factor (from the first two columns) for each of the project years.
8. Totals: Sum the discounted annual costs computed for each cost factor and enter the total at the bottom.
9. Remarks and Non-\$ Quantifiable Benefits:
- a. Record any qualifying remarks pertinent to any of the cost factors included or reasons for any costs excluded.
 - b. Record any differences that might be expected in the benefits to be derived from this alternative versus other alternatives. That is, outcomes that have not already been quantified in dollar terms, e.g. variations in leadtime or maximum production capability.
10. Name and Title of Principal Action Officer: Identify the name(s) of the principal parties responsible for the Summary of Costs.

Backup Sheet - D to P Stock Acquisition Costs (Numbers are keyed to
item numbers of the Format)

1. Submitting Army Component: The major subordinate command of AMC responsible for the analysis.
2. Date: Enter the date this sheet was prepared.
3. Item to be Produced: Enter the FSN and nomenclature of the end item for which the D-P stock cost is being computed. A separate sheet shall be made out for each end item for which the production capability is to be retained.
4. Item No: Enter a number for the end item being analyzed and the total number of end items for which D-P costs will be computed, for example Item No. 2 of 4 items.
5. D-P Stock Limitation: Enter any limitation imposed in the AMP on D-P stock acquisition for the end item being analyzed. If no limitation state "NONE."
6. Total Mobilization Requirements: Enter from Section II of AMC Form 1446.
7. Less Assets "as of:"
 - a. Date to be used will be assumed M-day or beginning or end of funding period as deemed suitable by submitting command.
 - b. Enter assets computed per formula shown at bottom of sheet.
 - (1) Current assets are assets on hand as of date of analysis.
(Including stocks of substitute items, see question 6.3 in Phase I)
 - (2) Peacetime Consumption Rate may be found in AMP.
 - (3) Applicable time is time from date of analysis to "as of" date.

8. Mobilization Production Requirements: Item 6 less Item 7.
9. Less Capacity of Planned Producers: Enter as applicable from Section III of AMC Form 1446.
10. D-P Day Stock Required: Item 8 less sum of Item 9. This figure provides an estimate of the total D-P stock needed to satisfy mobilization requirements.
11. D-P Stock Permitted to be Acquired:
 - a. If there is a limitation noted in Item 5 above convert that figure, if in months, into number of end items, using monthly production rate, and enter here.
 - b. If there is no limitation repeat Item 10.
12. D-P Stock Acquisition Cost: Multiply Item 11 by unit cost per end item and enter the product. Record unit cost figure used.
13. D-P Stock Acquisition Cost/Year:
 - a. If D-P stock acquisition is expected to be uniform over the time period of the analysis divide Item 12 by the time period of the analysis and enter the answer.
 - b. If D-P stock acquisition is not expected to be uniform over the time period of the analysis attach a separate schedule showing the expected D-P stock acquisition costs for each project year.
14. Sources for Above Information: Enter reference sources for the Items listed and other data used if pertinent.

Backup Sheet - Layaway Costs (Numbers are keyed to item numbers of the Format)

1. Submitting Army Component: The major subordinate command of AMC responsible for the analysis.
2. Date: Enter the date this sheet was prepared.
3. Items to be Produced: The FSN and nomenclature of all end items and critical components thereof for which the production capability is to be retained.
4. Name and Location of Current Producer(s). Name and address of all currently active producers of Item 3, either contractor or government controlled.
5. Location of Facilities to be Laid Away: If the information is available, indicate which producer's facilities are to be laid away and will be the basis for estimating layaway costs.
6. Project Year: Identifies the year in which the layaway costs will be incurred. If carried over more than one year prepare a separate backup sheet for each year and indicate the total number of years to make the layaway and the year summarized here.
7. Alternative Costs: Under each of the alternatives being analyzed enter the annual cost for each applicable cost element 8.(a) through 8.(f). These cost elements are the same as those required in Item 14 of Exhibit P-17 except for the addition of a separate line 8. (f) (1) for restoration of facilities, if applicable. FEMA Budget Codes 4000.0000 through 4922.0000 may be used as reference here.

8 d. (1), (2), and (3) Item Count: These items contain no cost information but are solely a count of the various types of items that comprise the layaway package and help define its size.

8 e. Replacement Values:

- (1) Enter the total number of items that will require rehabilitation.
- (2) Enter the current replacement value for all the items in (a) above. PEQUA replacement factors for IFE should be used to determine these values (see Appendix H).
- (3) Enter the current replacement value for all the DIPEC reportable items in the package (8.(a) again using the PEQUA replacement factors.

9. Totals: Sum the annual costs for each layaway alternative and enter the sum at the bottom of each column.

Backup Sheet - Holding Costs (Numbers are keyed to item numbers of the Format)

1. Submitting Army Component: The major subordinate command of AMC responsible for the analysis.
2. Date: Enter the date this sheet was prepared.
3. Items to be Produced: The FSN and nomenclature of all end items and critical components thereof for which the production capability is to be retained.
4. Items to be Stored: Indicate here whether the holding costs on this sheet are for the end items/critical components or for the IFE. A

separate sheet shall be prepared for end items and IPE.

5. Storage Location: Indicate the intended storage location, if known.

If not known, so state and indicate basis for cost estimates.

6. Unit cost of end items: Record unit costs of those items listed in Item 3 above. Costs should be based on mobilization production quantities.

7. Holding Cost Percent: Indicate percentage of unit cost to be used for estimating holding costs of end items, if this method is to be used. (See FM 38-22). If not to be used state not applicable and why.

8. Total square footage of floor space to be occupied by IPE, OPE and non-production equipment to be stored.

9. Project Year: Identifies the year in which a cost will be incurred. The total number of years (N) will be the longest time period during which an end item to be produced could be expected to remain in the Army supply system as a preferred item with type classification Standard - A. Enter from answer to Phase I preliminary evaluation question number 2.2 or 2.4.

10. Annual Cost:

(a) For end items--if the holding cost percent (Item 7) is used enter for each project year only the total annual cost obtained as the product of unit cost times holding cost percent times number of items to be stored. If holding cost percent is not used, separate estimates for each cost element will have to be made based on the judgment of the submitting command. O&MA Budget Codes 72111.xxxx (formerly 2220.xxxx) may be used as reference here. If holding costs do not apply to certain ammunition items so state.

(b) For IPE--Storage and maintenance cost elements may be based on per

square foot factors supplied by PEQUA. Deterioration and losses, if applicable, may be estimated as a percentage of acquisition cost based on DIPEC or command experience. Obsolescence will not apply if design of the end item(s) to be produced is not expected to be changed over the time period of the analysis. If design changes are expected to affect production capability of package some allowance will have to be made for obsolescence. PEMA Budget Codes 728011.20000 through 728011.22000 may be used as reference here. Enter costs for each project year.

11. Total: Sum the annual costs over all project years and enter the sum at the bottom of the column. The totals of holding costs for end items and IPE should be added for transfer to the Summary Cost Sheet.

Backup Sheet - Reactivation Costs (Numbers are keyed to item numbers of the Format)

1. Submitting Army Component: The major subordinate command of AMC responsible for the analysis.
2. Date: Enter the date this sheet was prepared.
3. Items to be Produced: The FSN and nomenclature of all end items and critical components thereof for which the production capability is to be retained.
4. Producer Facilities and Location of Layaway: Indicate intended storage locations(s), if known.
5. Project Year: Identifies the year in which reactivation costs will be incurred. It will be the end of the last year of the time period for

the analysis as estimated for other cost factors.

6. Discount Factor: Record the appropriate discount factor selected from Appendix F, Table F1 to be used on the Summary Cost Sheet.
7. Alternative Costs: Under each of the alternatives being analyzed enter the estimated cost for each applicable cost element of personnel and operating costs.
8. Totals: Sum the costs for each layaway alternative and enter the sum at the bottom of each column.

Appendix F
PROJECT YEAR DISCOUNT FACTORS

Table F1

Present Value of \$1
(Single Amount - To be used when
cash-flows accrue in different
amounts each year).

<u>Project Year</u>	<u>10% Mid Year</u>	<u>10% Year End</u>
1	0.954	0.909
2	0.867	0.826
3	0.788	0.751
4	0.717	0.683
5	0.652	0.621
6	0.592	0.564
7	0.538	0.513
8	0.489	0.467
9	0.445	0.424
10	0.405	0.386
11	0.368	0.350
12	0.334	0.319
13	0.304	0.290
14	0.276	0.263
15	0.251	0.239
16	0.228	0.218
17	0.208	0.198
18	0.189	0.180
19	0.172	0.164
20	0.156	0.149
21	0.142	0.135
22	0.129	0.123
23	0.117	0.112
24	0.107	0.102
25	0.097	0.092

Table F2

Present Value of \$1
(Cumulative Uniform Series - To be
used when cash-flows accrue in the
same amount each year).

<u>Project Year</u>	<u>10% Mid Year</u>	<u>10% Year End</u>
1	0.954	0.909
2	1.821	1.736
3	2.609	2.487
4	3.326	3.170
5	3.977	3.791
6	4.570	4.355
7	5.108	4.868
8	5.597	5.335
9	6.042	5.755
10	6.447	6.145
11	6.815	6.495
12	7.149	6.814
13	7.453	7.103
14	7.729	7.367
15	7.980	7.606
16	8.209	7.824
17	8.416	8.022
18	8.605	8.201
19	8.777	8.365
20	8.933	8.514
21	9.074	8.649
22	9.203	8.772
23	9.320	8.883
24	9.427	8.985
25	9.524	9.077

Appendix G1

SAMPLE FORM--AMC FORM 1446,
INDUSTRIAL READINESS ASSURANCE PROGRAM, ITEM ANALYSIS

GRADED _____ WHEN DATA ENTERED _____
 (SECURITY CLASSIFICATION)

INDUSTRIAL READINESS ASSURANCE PROGRAM

ITEM ANALYSIS (ANCR 715-73)

SECTION - I - ITEM DATA																
END ITEM OR COMPONENT NOMENCLATURE																
MOD. CODE																
RESPONSIBLE ACTIVITY																
LEADTIME: ADMINISTRATIVE -																
PRODUCTION -																
SECTION - II - MONTHLY MOB. CONS. REQ'S DATA - ALL USERS																
USER	M+1	M+2	M+3	M+4	M+5	M+6	M+7	M+8	M+9	M+10	M+11	M+12	M+15	M+18	M+21	M+24
ARMY-NATO																
ARMY-OTHER																
MARINE CORPS																
NAVY																
AIR FORCE																
SEL. ALLIES																
TOTALS																
SECTION - III - FACILITY DATA																
1.	PLANT INDEX NO	DD-FORM-1519 DATED	EXPIRES	ASPP CODE	BUS CLASS S-OR L	MONTHLY CAPABILITY										
						MSR	1-S-5	2-S-5	MAX							
2.																
3.																
4.																
5.																
6.																

SECTION - IV - PLANNED EMERGENCY PRODUCTION CAPABILITIES - DD FORM - 1512 - (GOLD BASE)

M DAY	TOTAL MOB.REQ.	CURRENT	FAC. 1	FAC. 2	FAC. 3	FAC. 4	FAC. 5	FAC. 6	TOTAL
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

SECTION - V - REMARKS - UNCLUDE CRITICAL COMPONENT DATA

FORM 1446
11 FEB 70

PREVIOUS EDITIONS ARE OBSOLETE

ITEM

DATE REV. NO. SCHED. NO. PAGE NO. OF PAGES

GRADED (SECURITY CLASSIFICATION) WHEN DATA ENTERED

Appendix G2
AMC FORM 1446—REVISED FOR INPUT
TO ECONOMIC ANALYSIS

GRADED _____ WHEN DATA ENTERED _____
(SECURITY CLASSIFICATION)

INDUSTRIAL READINESS ASSURANCE PROGRAM

ITEM ANALYSIS (AMCR 715-73)

SECTION - I - ITEM DATA														
END ITEM OR COMPONENT NOMENCLATURE										MOD. CODE		RESPONSIBLE ACTIVITY		
										UNIT / MEASURE		LEADTIME ADMINISTRATIVE - PRODUCTION		
SECTION - II - MONTHLY MOB. CONS. REQ'S DATA - ALL USERS														
USER	M+1	M+2	M+3	M+4	M+5	M+6	M+7	M+8	M+9	M+10	M+11	M+12	M+13	M+14
ARMY-NATO														
ARMY-OTHER														
MARINE CORPS														
NAVY														
AIR FORCE														
SEL. ALLIES														
TOTALS														
SECTION - III - FACILITY DATA														
1.	PLANT INDEX NO	DD-FORM-1519 DATED EXPIRES	ASPPO CODE	BUS CLASS S-OR L	MONTHLY CAPABILITY			Months M+						
					MISR	1-8-5	2-9-5		MAX					
2.														
3.														
4.														
5.														
6.														

SECTION - IV - PLANNED EMERGENCY PRODUCTION CAPABILITIES - DD FORM - 1519 - (GOLD BASE)

M DAY	TOTAL MOB.REQ.	CURRENT	FAC. 1	FAC. 2	FAC. 3	FAC. 4	FAC. 5	FAC. 6	TOTAL
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

SECTION - V - REMARKS - UNCLUDE CRITICAL COMPONENT DATA)

User - Requirements source document - Date

Date of last survey Name and Title of Action Officer

FORM 11 FEB 70 1446

PREVIOUS EDITIONS ARE OBSOLETE

ITEM

DATE REV. NO. SCHED. NO. PAGE NO. OF PAGES

GRADED WHEN DATA ENTERED (SECURITY CLASSIFICATION)



Appendix H

REPLACEMENT FACTORS FOR INDUSTRIAL PLANT EQUIPMENT (IPE)

11 March 1970

REPLACEMENT FACTORS
for
INDUSTRIAL PLANT EQUIPMENT (IPE)

<u>Year of Acquisition</u>	<u>Replacement Factor</u>
1970 - - - - -	1.00
1968/1969 - - - - -	1.06
1966/1967 - - - - -	1.14
1964/1965 - - - - -	1.24
1960/1963 - - - - -	1.28
1957/1959 - - - - -	1.39
1955/1956 - - - - -	1.58
1952/1954 - - - - -	1.81
1949/1951 - - - - -	2.07
1946/1948 - - - - -	2.53
1941/1945 - - - - -	3.04
1939/1940 - - - - -	3.16
1938 & Prior - - - - -	3.70

Source - Developed by FEQUA from 1957-59 based Price Indexes furnished by U. S. Bureau of Labor. Beginning with January 1957, the indexes incorporate a revised weighting structure. Replacement factors are based on final price indexes for January 1970.

- NOTE:
1. Acquisition Cost times Replacement Factor equals Replacement Cost.
 2. Replacement Factors are based on metalworking equipment, but may be used for non-metalworking equipment pending availability of other data.

REFERENCES

1. Dept of Army, "Army Industrial Preparedness Program," AR 700-90, Jul 70, p 1-1.
2. —, "Materiel Development Management," FM 38-7, Nov 66, p 15-6, para 15-15a.
3. Dept of Defense, Office of the Assistant Secretary of Defense (Comptroller), DOD Instruction 7041.3, 26 Feb 69.
4. Dept of Army, Office of the Comptroller, "Economic Analysis of Proposed Army Investments," AR 37-13, Ch 1, 22 Jan 70.
5. US Army Materiel Command, "Economic/Cost Benefit Analysis of Proposed AMC Investments," AMCR 11-34, 18 Mar 70.
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